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DX 4, page 1
(Toolco Order - 30 P. & W. JT3C-4 Engines, 2/14/56)

AX-1178
331

February 14, 1956

Re: Purchase Agreement for Pratt &
Whitney Aircraft JT3C-4 Turbojet
Engines

Pratt & Whitney Aircraft Division
United Aircraft Corporation
Rentschler Field
East Hartford 8, Connecticut

Attention: Mr. L.C. Mallet

Gentlemen:

Hughes Tool Company hereby places a firm order with
you for thirty (30) Turbojet Engines on the following terms
and conditions:

(1) Engine Model

P&WA Aircraft Model JT3C-4 engine with standard
equipment in accordance with Pratt & Whitney aircraft speci-
fication No. 1712 dated June 22, 1955, revised August 16,
1955.

(2) Unit Net Price

\$145,000.00 with standard equipment F.O.B. East
Hartford, Connecticut.

(3) Quantity

Thirty (30) engines.

(4) Shipping Schedule

Engines are to be scheduled for shipment between
Jul. 1, 1956 and December 31, 1956, with a more detailed
delivery schedule to be mutually agreed upon.

71337

Page 2
(Toolco Order - 30 P. & W. JT3C-4 Engines, 2/14/56)

Page 2 - Pratt & Whitney Aircraft Division - February 14, 1956.

(5) Payment Terms

(a) Five per cent (5%) with order.

(b) Fifteen per cent (15%) additional nine (9) months in advance of scheduled deliveries.

(c) Balance within the usual thirty (30) day period after delivery of the engines.

(6) Conditions of Sale

It is understood that this order is subject to your standard conditions of sale and to release by the United States Government. As a further condition to this order, Hughes Tool Company agrees that if it sells or lends the engines to Trans World Airlines, Inc., it will require Trans World Airlines, Inc., in consideration of the extension to it by Hughes Tool Company of the provisions of United Aircraft Corporation's standard sales warranty, to agree to release and discharge Hughes Tool Company and United Aircraft Corporation from any and all liabilities and obligations whatsoever arising out of the purchase or use of such engines except as expressly assumed by United Aircraft Corporation in said warranty.

(7) Retrofit Plan

You will make available to us sometime after July 1, 1950, by means of your usual "50-0/0 Campaign Change" procedure, the material necessary to retrofit the JT3C-4 engines to qualify those engines for the same static sea level take-off thrust as the JT3C-5; provided that we notify you to that effect prior to the expiration of the "JT3C Overhaul Material Cost Plan".

(8) Overhaul Material Cost Plan

You agree to extend to us your "JT3C Overhaul Material Cost Plan", which establishes a ceiling on engine overhaul material costs during the early operation of JT3C turbine engines.

71368

DX 4, page 3
(Toolco Order - 30 P. & W. JT3C-4 Engines, 2/14/56)

Page 3 - Pratt & Whitney Aircraft Division - February 14, 1956

(9) It is understood that we will negotiate a general terms agreement which agreement when negotiated may be substituted by mutual consent for the standard conditions of sale.

(10) It is expressly understood that these engines are being bought for resale to and use by Trans World Airlines, Inc., and Trans World Airlines must accept the warranty disclaimer set forth in Paragraph (6) above.

Enclosed herewith is our check including the five per cent (5%) down payment for this order.

Yours very truly,

HUDGES TOOL COMPANY

Dr. Raymond M. Keeney
Vice President

71369

(Letter - Toolco to P. & W. re Jet Engine Orders, 2/14/56)

331

February 14, 1956

Re: Purchase of JT3C-4 and JT4A-3
Engines

Pratt & Whitney Aircraft Division
United Aircraft Corporation
Rentschler Field
East Hartford 8, Connecticut

Attention: Mr. L. C. Mallet

Gentlemen:

Today Hughes Tool Company has placed orders for 3C JT3C-4 engines and 16C JT4A-3 engines. In connection with those orders Hughes Tool Company desires additional agreements, which are not proposed as conditions to the orders but which are submitted in the belief that they will be favorably considered by you. They are as follows:

1. The JT3C-4 engine will be C.A.A. certified for use at 15,300 lbs. of thrust and will be warranted for such use after an initial period not to exceed one (1) year from time of certification of the first commercial transport equipped with such engine. Prior to the expiration of such period, it is your intention to limit the warranty for use at 14,000 lbs. thrust.

2. If, after negotiation, United Aircraft Corporation extends to Trans World Airlines, Inc., or any of its other commercial customers more favorable warranty conditions than contained in the standard sales warranty described in the purchase orders,

71363

February 14, 1956

DX 5, page 2

(Letter - Toolco to P. & W. re Jet Engine Orders, 2/14/56)

you will modify such warranty to include the more favorable conditions which may have been so negotiated.

3. To conform to expected requirement of the airframe manufacturer, engines being purchased under this order will be delivered as follows:

(a) JT3C-4 engine: 1 engine for training purposes on February 1, 1959, 10 engines for spares by April, 1959, 10 engines by May, 1959, and 7 engines by June, 1959; and

(b) JT4A-3 engine: 4 engines a month in June through November, 1959; 3 engines a month in December, 1959, through November, 1960. It is also desired that 10 spare engines a month be delivered in November, 1959, through April, 1960.

We will be glad to discuss these matters with you at any time.

Yours very truly,

HUGHES TOOL COMPANY

By [Signature]
Vice President

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W. P. MARSHALL, PRESIDENT

CLERK	FILE	CASE NO.	CHARGE TO THE ACCOUNT OF	TIME FILED
			Andrew J. Smith, Campbell & Bradley	

...transmission, subject to the terms on back hereof, which are hereby agreed to

February 15, 1956

DX 6

(Toolco Order - 90 Additional P.& W. JT4A - 3 Engines, 2/15/56)

100-100000 Aircraft Division
 United Aircraft Corporation
 Rensselaer Field
 West Hartford 3, Connecticut

RUCI URGENT

Adm: Mr. W.F. Collins

Enter our order for an additional 90 J14A-3 engines under the same terms and conditions as applying to our order for the 100 J14A-3 engines with the further provision that Pratt & Whitney Aircraft may schedule this additional order into 1961. Advance payment of five per cent (5%) is being forwarded.

HUGHES TOOL COMPANY
By: Raymond H. Holliday
Vice President

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HTC-1

C

(Amendment - Toolco Order for 300 P. & W. Jet Engines, 9/7/56)

PRATT & WHITNEY AIRCRAFT

DIVISION OF UNITED AIRCRAFT CORPORATION

EAST HARTFORD, CONNECTICUT, U.S.A.

CABLE ADDRESS "AIRCRAFT"

DX 7

September 7, 1956

Hughes Tool Company
Executive Offices
22nd Floor Gulf Building
Houston 2, Texas

Attention: Mr. C. H. Price, Vice President

Gentlemen:

This will confirm the recent conversation between Mr. R. W. Rummel of Trans World Airlines and our Mr. Frank Dulyen concerning the final distribution of jet engines which you now have on order.

Your orders are evidenced by your letter of February 14, 1956 for 30 JT3C-4 (J57) engines, your letter of February 14, 1956 for 180 JT4A-3 (J75) engines and your telegram of February 15, 1956 for 90 JT4A-3 (J75) engines. Hence, there is a total of 300 jet engines on order which includes 270 J75 and 30 J57 engines.

It is our understanding that you desire to change such orders by increasing to 66 the number of J57 engines and by reducing to 234 the number of J75 engines. This change in the final engine distribution is acceptable to us.

If the foregoing is satisfactory to you please have an authorized official of your company sign one of the duplicate originals of this letter. Upon receipt by us of one of the duplicate originals so signed, we shall regard this as a binding amendment to each of the orders referred to above.

Very truly yours,

UNITED AIRCRAFT CORPORATION

By

W. A. Parkins
W. A. Parkins, General Manager
Pratt & Whitney Aircraft Division

ACCEPTED:

Date

C. H. Price
HUGHES TOOL COMPANY

cc: Mr. C. H. Price, Vice President
Hughes Tool Company
22nd Floor Gulf Building
Houston 2, Texas

C
O
P
Y
270

DX 8

(Letter - P. & W. to Rummel re 300 Jet Engines, 9/7/56)

September 7, 1956

Mr. A. W. Rummel, Chief Engineer
Trans World Airlines, Inc.
10 Richards Road
Kansas City 5, Missouri

Dear Bob:

This will confirm our telephone conversation during which you provided us with the final distribution of J57 and J75 engines on order for TWA.

As you know, the orders are evidenced by a letter from Hughes Tool Company of February 14, 1953 for 10 J75C-4 (J57) engines, a letter from Hughes Tool Company of February 14, 1953 for 100 J75A-3 (J75) engines and a telegram from Hughes Tool Company of February 15, 1953 for 90 J75A-3 (J75) engines.

It is my understanding that it is your desire that Hughes Tool Company change such orders by increasing to 63 the number of J57 engines and by reducing to 234 the number of J75 engines and as I also indicated to you, this is agreeable to us. In order to make this arrangement contractually effective, we have written a letter to Hughes Tool Company along the lines indicated above and requested Hughes to sign a duplicate copy, thereby amending the orders issued to us by Hughes.

During our telephone conversation, you indicated that TWA desires to expedite the delivery of all commercial J57 and J75 engines produced by us until the orders for TWA engines are completed excepting for those engines on order for which we committed ourselves prior to our commitment for the J75 engines. As I pointed out to you, such an arrangement would not be agreeable to us and, in fact, would be highly undesirable. It is suggested that you give us your realistic delivery requirements to see if it is not possible for us to meet these in a normal manner. We must, of course, reconcile the duplicating orders between Boeing and TWA.

Best regards,

Very truly yours,

UNITED AIRCRAFT CORPORATION
Pratt & Whitney Aircraft

F. W. Dulyn
Chief - Commercial Sales

74656

(Letter-Rummel to Collings re Boeing 707, 1/12/55)

CONFIDENTIAL

EXHIBIT

10

W.B.

Mr. John A. Collings
200 Airport Building
Kansas City, Missouri

Mr. R. W. Rummel
206 Airport Building
Kansas City, Missouri
January 12, 1955

Mr. R. W. Rummel

Boeing 707

I met with Boeing representatives Ken Gordon and Bill Taylor Monday morning, January 10, in Detroit and with George Schairer Monday afternoon.

Boeing is most anxious to enter into active specification negotiations with TWA at this time. While Boeing representatives are in no position at the moment to finalize any business arrangements, they, nevertheless, are anxious to design the commercial 707 to meet as many requirements of major potential customers as practical.

Boeing specification conferences have been under way with Pan American for nearly two weeks. Boeing is anxious to receive comments from TWA not only as a potential customer but since we operate both international and domestic service. This once places us in a good position to indicate reasonable airplane design compromise to best satisfy both requirements. Boeing wishes to proceed with TWA specification conferences within the next two weeks.

I told the Boeing representatives that while we would like very much to go over Boeing 707 specifications in detail, we had been committed to certain work on the West Coast which would make this impractical on a large-scale basis for perhaps as long as two months. I told them, however, I would be glad to go over the specifications personally at the first opportunity with them but that we could not enter in any large-scale activities for the present.

Boeing is reluctant to agree to sell Pan American the twenty-five jets it wants for fear of losing TWA's potential order for fifteen jets. Pan American's Juan Trippe has insisted that Boeing deliver the first twenty-five airplanes to PAA and TWA's representative has insisted that Boeing deliver the first fifteen jet aircraft to it. Boeing has unsuccessfully attempted to resolve this issue. It appears obvious that as soon as the 1449A project is announced that Boeing will rapidly conclude deal with Pan American for the delivery of its first commercial jet transports. Since the Boeing jet may well be the first practical jet airliner to see airline service and since PAA is so highly competitive to TWA, I suggest we try to work some sort of option agreement with Boeing for a reasonable number of competitive delivery positions before February 15, the probable date of the 1449A announcement.

R. W. Rummel

RWR:JC

(Notes of Convair Negotiations-March 24, 1955)

CONFIDENTIAL

KWR:JC

March 24, 1955

EXHIBIT

11

W.B.

MEETING RECORD OF NEGOTIATIONS
WITH CONVAIR

CHRONOLOGICAL FILE

CHRONOLOGICAL

arrived in San Diego on Saturday, March 19, toward evening. Early evening I telephoned Jack Zevely to make arrangements for meeting either that evening or Sunday to discuss the over-all situation. Jack indicated he could not get his people together on such short notice for a Sunday meeting but that he would be ready to go Monday morning. We did not discuss the over-all situation to any material extent.

Sunday evening we met with Zevelys at the Loomis' at which time arrangements for Monday meeting were confirmed but little was said about the deal. Monday morning, March 21, I met Zevely in the dining room at which time we briefly discussed the deal. As mentioned, as I knew, that thirty airplanes were to be involved, that the price \$4,750,000 each, and that delivery was intended during the middle of 1958, but confirmation of delivery dates would await word from Fort Worth, which was expected Monday afternoon. Jack explained that the present plan was for the airplanes to be built in Fort Worth with Fort Worth detail engineering but with San Diego handling preliminary design and more or less governing the project. Jack said Bayless was getting in touch with me shortly for a meeting Monday morning.

Bayless called about half an hour later and discussed plans for the meeting. Meeting was arranged at the La Jollian for 9:30. Ralph said the following men of the project at Convair besides himself:

Frank Hase (pre-design)
Art Carloff (Who handled the interior and preview drawings)
Crawford Truex (weight man)
Al Kidler (aero)
Jack Donaldson (Who works for Zevely)
Dick Waldo (Who also works for Zevely. Waldo has not been involved in the affair to any material extent since the Beverly Hills meeting.)

Meeting at the La Jollian started about 9:30 and was attended by the following:

Ralph Bayless
Crawford Truex
Al Kidler
Bill Brown
Bob Rummel

We decided that the best way to proceed would be per my conversation with Zevely Monday; that is, we would try to write a brief, preliminary, general objective specification which would be followed by the preparation of a detailed specification during a sixty or ninety day period subsequent to signing the preliminary contract. The preliminary contract as discussed with Zevely would probably be in form — probably a letter type agreement — which would portray the essence of oral and per-ait approval by Convair's Board at the March 31 meeting. Zevely was to have his people prepare a short form of contract for my review.

I called Harry West on Sunday and advised him of the probable need of his presence this week and confirmed this Monday evening at which time he stated he would be here about midnight Tuesday for a Wednesday meeting here, after which he

(Notes of Convair Negotiations-March 24, 1955)

CONFIDENTIAL

would have to attend the Albuquerque hearing on Thursday and Friday, but that he would return to La Jolla for Saturday and Sunday. In the event the Albuquerque hearing continues into Monday, he will be there at that time and return following the hearing to La Jolla for continuation of discussions if necessary.

I discussed West's presence with Collings by telephone and gave him very brief information on the details on Monday morning at which time he also confirmed that West should attend the Albuquerque hearing.

I did not mention earlier that one of the men who attended the conference, Bill Brown was new to the project and his work is specifications.

Hughes called Saturday evening asking for expedited handling of the contract and specifications. Hughes agreed at that time that the brief form of specification and contract I suggested was exactly what he would like to have. He also called Monday morning again pointing out the need for urgent handling in view of the Lockheed situation and asked that we make an effort to find out what the CAA would require in the way of pre-service airplane testing, since Mr. Collings had indicated to him that it might run as much as a year. Now, the Lockheed situation is critical with respect to timing since the Lockheed management turned down the Lockheed Sales Department effort to build the 1049G fuselage on the new wing. Schwartz resurrected this plan on the basis of higher cost and on the basis that he could also sell KLM. However, KLM was to make its decision by Monday, March 21. I have not heard what KLM decided if anything, on that date and understand now there is still a possibility that Lockheed may wish to continue with this project. This airplane would be competitive with the DC-7C on speed and could be as competitive on range and would be available for use during the Summer of 1957. The Convair project could be available, subject to confirmation by Fort Worth, for use during 1958, provided the CAA did not require extensive route testing. The original schedule called for final certification by July of 1958 and initial certification by March of 1958. The first flight was scheduled twenty-seven months from go ahead, which, when originally set, was June, 1957. Now, Convair plans to have sixteen airplanes completed by the end of July, so presumably upon receipt of final certification, operations could commence rapidly because pilot training could have taken place prior to that time. Convair has included in its time estimate 600 hours for CAA accelerated service tests and 300 hours for airline service tests. I agreed with Hughes to send a man to Washington to find out what he could about current CAA thinking on requirements for initial jet transport operations. He agreed this was the best method, provided it was done in a way which would not cause the CAA to become suspicious as to our activities here on the Coast. I called Rourke and asked him to go to Washington to contact Konecny of the CAB and Henry Weeks of the CAA on other matters, bringing this subject into the conversation cleverly and adroitly so as to avoid these men attaching any significance to the question other than honest planning curiosity. Rourke was instructed to talk to Konecny about furthering the international regulation picture, about Malloy's activities on jet transport regulations, and to lead into the discussion at hand, after which he was to call me. Rourke planned to leave Kansas City Monday afternoon but due to the snow storm was forced to wait until Tuesday morning. He telephoned me Tuesday advising of the delay and suggesting that the approach to Weeks take the form of Rourke inquiring concerning the progress of a SAE paper on the subject at hand. I thought this was a good idea and told him that would be all right.

CONFIDENTIAL

Lowery called me Monday afternoon advising that he would not have the confirmed delivery information from Fort Worth until 5:00 Tuesday afternoon but that it appeared that Fort Worth would be able to confirm the original delivery estimate. I telephoned Hughes' office at Miami later Monday evening and left a message to the effect that the delivery information would not be available until 5:00 Tuesday and that I would call upon receipt of this information. During the Monday evening Ralph Bayless advised that it was Convair's intent to place the project at Fort Worth due to space available -- that they would prefer to do it at San Diego but felt it was necessary that the job be done at Fort Worth. His concern is the same as mine -- that is, the ploughing into the project the commercial know-how that exists at San Diego. Ralph said they plan to do this by having about twenty key men from Fort Worth participate in all detail negotiations and to have them work hand in hand with preliminary design in San Diego so that they would become imbued with airline know-how and could instill this information into others back at Fort Worth. This, of course, could not possibly take the place of airline know-how acquired previously through the years by direct contact with service experience problems, and if the project is done at Fort Worth, and it appears that it would be, this will be one of the things to watch carefully. I do not think this aspect is sufficiently important not to go ahead with the project. An example of this is the excellent results we had with the Martin Company by working closely with Martin and seeing that they did build the airplanes in accordance with TWA standards and provisions. There is some advantage to working with people who are interested in acquiring airline know-how but who do not know too much about it themselves initially. In contrast to this is attempting to sell Douglas or Lockheed on an airline problem when they figure they already know all about it, in some instances at least. Under these circumstances it is most difficult to put points over; whereas, if the Convair situation is properly cultivated this may not be a problem.

A short form of spec was discussed and Bayless instructed Bill Brown to proceed with the preparation of the spec for review today, Tuesday the 22nd. I also discussed at some length interior arrangements with Crawford Truax, who is currently having drawings prepared showing the up-to-date arrangement desired. I pointed out the need for very rapid convertibility from international to domestic, the need for multi-service type interior, as well as quick convertibility from it to sky coach to standard to siesta. Door locations were discussed, and I requested that a front left-hand door be installed for passenger use and that floor-length emergency exits be installed over the wing in lieu of the four window type exits now located there. The window type emergency exit is too high over the wing, being some six or seven feet above the wing contour and being located directly over the wide, sweeping curvature of the wing fillet so that a stable footing would be impossible whether the wing were wet or dry. This condition would especially be bad if the wing were washed. I also commented on the location of the forward life raft on the right-hand side which is located over the floor-length emergency exit just aft of the flight station. It was some six feet off the floor which would be difficult to lower to make ready for use. This should be located in a more convenient location. Other life rafts followed latest TWA thinking to be located immediately adjacent to the doors with the exception of the life raft at the main cabin door which was on the wrong side of the airplane.

In the multi-purpose interior, I requested that they look at locating the standard passengers forward and the sky coach passengers rearward because of the probable cabin noise distribution. This means that the lounge presently located at the rear should be located either midship or forward and, similarly, it may mean

that the galley should be located farther forward to avoid servicing the first-class meals through the sky coach section. This problem is not yet solved but Convair agreed to lay it out and take a look at the over-all situation. The interior plan generally looked fine with respect to sky coach, standard and siesta type seating arrangements but did not do a good job with respect to the multi-purpose type interior for the reasons just mentioned. It appeared that the fuselage would have to be at least one seat row longer to accommodate our emergency exit request.

With respect to certification, Bayless advised that sixteen airplane months would be required from first flight to CAA certification. He figured that the minimum elapsed time was twelve to fourteen months. He did not recall the hours on the ships at the end of the test period. He went on to say that certification would be his direct problem and that actually he should not be making an estimate but that these figures were the ones he recalled from the earlier preliminary discussion.

To deviate for a moment to explain the Lockheed situation, the basic problem Lockheed has as indicated by Leonard Schwartz is that Lockheed estimates that if they sell sixty 1649's, there is no profit potential and a real loss of \$12,000,000 minimum. Some of Lockheed's management estimated that the loss could run as high as \$24,000,000. The sixty airplane estimate is Schwartz's for the remaining commercial market for airplanes of this type which he feels Lockheed could capture. Schwartz stated that if we would pay for the pod development spread over twenty-five airplanes, the originally quoted price of \$2,275,000 would be increased \$61,364 or a total of \$2,336,364. Schwartz said they had to have a firm order for twenty-five from TWA and that they would hold out seven delivery positions for KLM. TWA deliveries would run April - 4, (1947) May - 6, June - 4, July - 4, August - 4 and September - 3. KLM's May - 2, June - 2, July - 2 and August - 1. He further explained that Hughes wanted ten podded airplanes and fifteen with structural provisions. He stated the expected certification on the 156,000 pound non-podded airplane by the end of April, 1957, with the first flight scheduled for September of 1956. The first fifteen would not have wiring, plumbing, etc. built into the airplanes for the pods except the test airplane. Upon completion of certification of the non-podded airplane at 156,000 pounds, Lockheed would start certification with the podded airplane, the pods going on the test airplane already equipped with plumbing, wiring, etc. Lockheed would then complete the last ten airplanes with pod provisions. Certification with pods would be expected the middle of September at which time we would have ten podded airplanes ready for operation. No price at this time was stated for the pods. Such airplanes delivered with pod provisions prior to certification could be used as non-podded airplanes — the pod installation being a relatively minor job.

During a subsequent conversation with Hughes, he advised that Lockheed could build fifteen ships by the end of June with structure for 165,000 pounds with the pods installed and 156,000 pounds without the pods and that the fuselages would have the new emergency exits but otherwise be the 1049G. The structural provisions for the pods on the first fifteen would increase the price so that each airplane would cost \$2,300,000 each. This is \$36,364 less than the Schwartz figure. He stated Lockheed would start immediately with pod installation engineering and that if pods were sold to others, would rebate on a prorated basis development costs to Hughes Tool. Minimum order of airplanes is twenty-five, the first podded airplane to be the sixteenth with certification with pods by August, 1957 and delivery schedule as follows: April - 4, May - 7, with certification at 156,000 pounds by the end

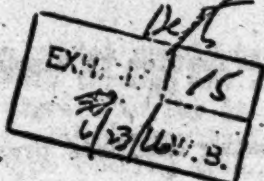
By June - 4, with airplanes for KLM to follow and certification in August with
pods.

During a meeting with Convair today, March 22, the following men were present:

Norman Robins
Frank Hass
Crawford Truex
Bill Brown (specification man)

Byliss and Al Ridler were also present.

(Draft C. & C. Report-TWA Financial Forecast 1959-61)

DRAFT

June 26, 1959

Mr. A. V. Leslie
Senior Vice President-Finance and Treasurer
Trans World Airlines, Inc.
330 Madison Avenue
New York 17, New York

Dear Mr. Leslie:

In accordance with your request, we have made a study of TWA's Financial Forecast dated May 15, 1959 for 1959-1961, the plan of operation which is the basis for this Forecast, the premises used for the estimates which comprise the Forecast and pertinent industry data. From this study, we are of opinion that the Financial Forecast is a reasonable expectation for each of these three years, 1959-1961, for the intended plan of operation.

PLAN OF OPERATION

The principal element of TWA's plan of operation is the number and type of aircraft operated. At the end of the year 1958, TWA had a total of 189 piston-engine aircraft in its fleet. On March 20, 1959, the Airline commenced service with a jet-engine aircraft, and by the end of 1960 expects to have 45 jet aircraft in service and to have retired a number of piston aircraft. The principal characteristics of TWA's aircraft fleets of 1958 and proposed for 1961 are shown by the table on the following page. The second table following shows the expected schedule of transition of the fleet, by fiscal quarters, through 1959 and 1960.

NUMBER AND CHARACTERISTICS OF TWA'S AIRCRAFT, 1958 AND 1961

Units	Model	Name	Aircraft		Seats (A)		
			Engines		Tourist or		
			No.	Kind	First	Economy	Speed (mph)
<u>1958 Fleet</u>							
29	L-1649A	"Jetstream"	4	Piston	26	40	320
9	L-1049H	Super H Constellation	4	Piston	-	97	315
23	L-1049G	Super G Constellation	4	Piston	33	39	315
9	L-1049A	Super Constellation	4	Piston	64	-	315
39	L-749	Constellation	4	Piston	49	-	310
32	L-049	Constellation	4	Piston	-	80	270
37	H-404	Martin	2	Piston	40	-	240
6	DC-4		4	Piston	-	-	200
169					-Cargo- & Charter		

<u>Proposed 1961 Fleet</u>							
15	B-707-131	Boeing Jet	4	Jet	46	65	575
10	B-707-331	Boeing Int'l. Jet	4	Jet	50	71	595
20	CV-580	Convair Jet	4	Jet	43	44	600
0	L-1649A	"Jetstream"	4	Piston	26	40	320
32	L-049	Constellation	4	Piston	75	-	270
23	L-1049G	Super G Constellation	4	Piston	49	20	315
1	L-1049H	Super H Constellation	4	Piston	-	-	315
117					-Cargo- & Charter		

(A) Excluding lounge seats not normally sold.

ADDITIONS AND RETIREMENTS OF TWA'S AIRCRAFT, 1959-1960

Aircraft	Inventory at 1/1/59	Changes in Fleet(B)								Inventory 1960
		Quarters 1959				Quarters 1960				
		1st	2nd	3rd	4th	1st	2nd	3rd	4th	
<u>Additions</u>										
<u>Jet Engine</u>										
B-707-131	-	2	6	7	-	-	-	-	-	
B-707-331	-	-	-	-	2	3	5	-	-	
CV-880	-	-	-	-	1	2	6	8	3	
Total	-	2	6	7	3	5	11	8	3	
<u>Retirements (A)</u>										
<u>Piston Engine</u>										
L-1649A	29	-	-	-	-	2	6	8	5	
L-1049H	9	-	-	-	-	-	-	-	5	
L-1049G	28	-	-	-	-	-	-	-	-	
L-1049A	9	-	-	-	9	-	-	-	-	
L-749A	39	-	-	-	-	-	9	15	15	
L-049	32	-	-	-	-	-	-	-	-	
M-404	37	3	-	2	1	5	10	8	8	
DC-4	6	-	-	6	-	-	-	-	-	
Total	189	3	-	8	10	7	25	31	33	
Totals in Use	189	188	194	193	186	184	170	147	117	

(A) TWA plans to sell these aircraft which are listed for retirement, but for purposes of the subject Forecast, these planes are assumed to be retired and depreciation credits continued.

(B) The dates indicated here for additions and retirements are based on present delivery schedules for new aircraft and present plans for flying certain routes and certain schedules. This, however, must be considered as only an approximate time schedule by which the transition of the fleet will take place.

As shown by the preceding tables, certain significant changes are planned for TWA's fleet between 1958 and 1961, as follows:

- a. The number of aircraft in the operating fleet will be reduced by 1961, from 189 to 117 aircraft.
- b. In the 1961 fleet, 33 per cent of the planes will be new jet-powered aircraft with speeds over 500 mph. These jet aircraft are larger, more comfortable and more attractive (in our opinion) than the present piston aircraft which make up the fleet.
- c. The present 2-engine aircraft will be retired and the 1961 fleet will include only 4-engine aircraft.
- d. Seating in the L-049 Constellation will be changed from an 80-seat, tourist-class interior to a 75-seat, first-class interior, and the L-049 will be used generally on the short-range flights in place of today's ^{Martin} ~~4404~~ aircraft.
- e. All other aircraft in the 1961 fleet will be of "mixed configuration", with both first-class and tourist seating, whereas the 1958 fleet had several types of aircraft with either all first-class or all tourist seats. The Super C Constellation in 1958 was operated with 33 first-class seats and 39 tourist seats. It is planned that this same aircraft in 1961 will be operated with a larger number, 49, first-class seats and only 20 tourist seats. The mixed configuration seating is expected to give TWA maximum opportunity to meet the demand for each type of seat. The percentage of each type of seat can be changed as the demand changes; for example,

more tourist seats can be provided during the summer months when the demand for tourist seats is high and the demand for first-class seats is low.

- f. The principal transition from the current fleet to the fleet for 1961 will take place during the middle and latter parts of 1960.

The end result of the above-described changes is expected to provide an aircraft fleet which, although smaller in numbers, will be more attractive to the potential air traveler and will serve him better.

Competitors' Aircraft

TWA's 1958 aircraft fleet, as listed in a preceding table, was primarily Lockheed aircraft (model number has a prefix 'L'), whereas TWA's principal airline competitors have been using Douglas aircraft that are faster than comparable Lockheed models. The table which follows lists comparable speeds for various Lockheed and Douglas aircraft.

<u>Aircraft</u>	<u>Speed</u>
Lockheed Constellation L-749	305 mph
Douglas DC-6	315 mph
Lockheed Super C Constellation L-1049G	315 mph
Lockheed "Jetstream" L-1649A	320 mph
Douglas DC-7	340 mph
Douglas DC-7C (Overseas model)	350 mph

When TWA receives the Boeing and Convair jet-engine aircraft now on order, it is expected to have a jet aircraft fleet with speeds equal to the speeds of its principal competitors' jet fleets, as follows:

<u>Aircraft</u>	<u>Speed</u>
<u>TWA's Jet Fleet</u>	
Boeing B-707-131	575 mph
Boeing B-707-331	595 mph
Convair 440	600 mph
<u>Competitors' Jet Fleets</u>	
Boeing and Convair models that are identical with the above-listed TWA aircraft, plus:	
DC-8 with the JT3 jet engine	565 mph
DC-8 with the JT4 jet engine	595 mph
Convair 440	615 mph

So far as passenger comfort and attractiveness and nonstop range are concerned, available data on seating plans, interior dimensions, plans for decoration and arrangements of the plane interiors and performance expectations indicate that TWA's jet fleet can be as attractive to potential air travelers as the competitors' jet fleets.

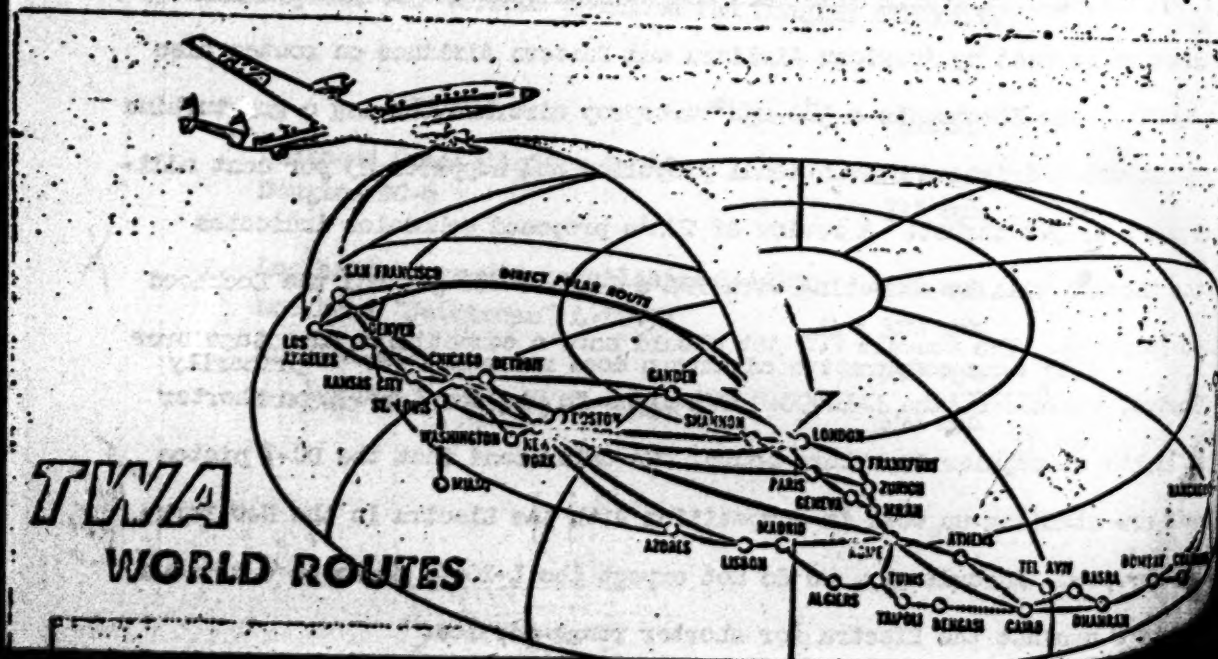
In addition to the above-listed competitors' jet aircraft, TWA's ~~fleet~~ will also face competition from the Lockheed L-188 Electra which is used by American Airlines and Eastern Airlines on routes also flown by TWA. The Electra is a 380-mph turboprop aircraft, having a gas turbine power plant which drives a conventional propeller and supplies 25 per cent additional power by jet thrust. A review of TWA's proposed schedules indicates that the Electra will be competing with TWA's Convair 440 jet and the Lockheed L-1049G (piston). The Convair 440 jet should have a competitive advantage over this same comparative advantage does not exist for primarily the Electra, but ~~the~~ the L-1049G. TWA plans to use the L-1049G on shorter flights at popular departure hours. We understand that the DC-7 piston aircraft are standing up well in competition with the Electra in the New York-Los Angeles service. Accordingly, we do not expect the L-1049G to be at a serious disadvantage against the Electra for shorter range service.

Route Certification

Another principal feature of TWA's plan of operation is the extent and nature of the routes which TWA is certificated to operate, this certification being by the United States and foreign Governments. This rigid governmental control of cities served and routes flown is expected to continue, and for the subject Financial Forecast it is assumed that the routes allocated to TWA throughout the period 1959-1961 will be essentially as they were in 1958, except that it has been assumed that American Airlines ^{will} be awarded non-stop rights between New York and San Francisco thereby dividing that market between TWA, United and American.

TWA, like most other airlines, is constantly seeking governmental approval of route changes such as certification for ^{new} long-range routes and permission to drop cities and routes with light traffic. TWA plans to continue this effort, but the Forecast is premised on no material change in certification.

TWA's routes which are shown by the sketch which follows, are divided into two general categories, Domestic and International.



International Flights

The frequency and distribution of International flights scheduled on the transatlantic routes by TWA for the summer period: of 1959 and as planned for 1961 are shown by the table which follows:

Scheduled Eastbound Transatlantic Flights By Routes	Summer Schedule Flights Per Week	
	1959	Proposed 1961
New York - London	7	14
Paris	9	14
Lisbon	5	6
Rome	2	0
Madrid	2	0
Shannon	3	0
Frankfurt	2	0
Boston - Paris	1	0
Shannon	3	1
Santa Maria	1	1
London	2	0
Detroit - Shannon	1	0
Chicago - Paris	1	0
London	2	0
Los Angeles - London	1	0
San Francisco - Paris	1	0
Total Transatlantic	43 (A)	36

(A) TWA's 1958 summer schedule included 43 flights per week.

The table above shows TWA's plan to concentrate International service the highest volume (and most profitable) routes, New York-London and Paris. is planned to serve Chicago-Paris (and other nonmajor traffic) by transfers New York City (or other principal terminals) and thus increase the load on principal transatlantic flights.

In addition to the above-listed transatlantic flights, TWA also operates a large network of routes east of the European gateway cities of London, and Lisbon, as far eastward as Bangkok. This area is served on a relatively

low-frequency basis. In 1958 and 1959, this east of the gateways traffic represented 24.3 per cent and 27.0 per cent, respectively, of the International available seat-miles, and in 1961 is expected to represent only 18 per cent of the available seat-miles estimated for the International Division. The decreased percentage of available seat-miles east of the gateways by 1961 reflects TWA's planning to concentrate aircraft utilization on transatlantic service which has the highest passenger traffic potential. TWA plans, for the summer of 1960, to assign eight B-707-331 aircraft to transatlantic service and eight "Jetstream" aircraft to service east of the gateways with certain minor exceptions including four weekly transatlantic crossings with the "Jetstream" and two weekly Boeing jet flights between Rome and Cairo.

International traffic has traditionally had a wide seasonal variation, always being high in June through September and quite low during winter months. TWA's plan for 1961 provides for less increase during the summer months, in the hope of reducing the wide seasonal variation. This "less increase in the summer" program has been started this year, 1959, and should improve TWA's profit (because of the Airline's inability to match wide variations in revenue with similar variations in expense).

By using aircraft as good as competitors on transatlantic service, TWA expects to obtain ~~expect to obtain~~ a full share of wintertime business and first-class traffic which is less seasonal, again ^{with} toward the aim of reducing the seasonal variation that has made economic International operation so difficult in the past.

The Polar Route flights direct between California and Europe, which are included in the 1959 schedule pattern, are not in the 1961 plan. Travelers now using this route are assumed to switch to a routing via New York City.

We have examined the details of these plans, and believe the program to limit the number of aircraft assigned to summer service to less than the

demand, to use jet aircraft for transatlantic service that will be attractive to first-class travelers, and to use the lower capacity "Jetstream" for service east of the gateways is a sound plan directed toward profitable International operation.

AIRLINE INDUSTRY TRAFFIC

We believe it is desirable to consider the previously mentioned forecasts of TWA revenue passenger-miles, in comparison with data on total airline industry traffic volumes, to test the reasonableness of the TWA forecasts.

Domestic Trunk Airlines

TWA is the fourth largest member of the Domestic trunk airline industry. This industry comprises twelve airlines which carried the below-listed revenue passenger-miles in 1958:

<u>Airline</u>	<u>1958 Revenue Passenger-Miles (Domestic Operations) (Thousands)</u>
United	4,915,179
American	4,890,870
Eastern	3,811,239
TWA	3,661,807
Capital	1,413,041
Delta	1,400,031
Northwest	1,110,862
National	990,251
Braniff	913,073
Western	503,102
Continental	419,086
Northeast	407,116
Total - Domestic Trunk Lines	24,435,657

TWA's Jet Seat Availability

The table on the following page shows seats available in jet aircraft, by quarters, for TWA Domestic and its principal domestic competitors. TWA's percentage of jet seats reaches a maximum of 27.1 per cent in the third quarter of 1959, which is reflected in the previously mentioned high revenue passenger-miles forecast for 1959. Thereafter, TWA's percentage of jet seats (of these competing airlines) declines to 16.9 per cent by the end of 1961, and this is reflected in the modest increases forecast for revenue passenger miles for 1960 and 1961.

Total Jet Aircraft On Order

The total number of jet and turboprop aircraft on hand and on order by the principal competitors of TWA for use on routes generally competitive with TWA's routes, versus the piston aircraft, is as follows:

	<u>Domestic Airlines (See list p.27)</u>	<u>Transatlantic Airlines (See list p.31)</u>	<u>Total</u>
<u>Piston Aircraft</u>			
2-Engine or (A)	185	25(A)	210
4-Engine	<u>401</u>	<u>127(B)</u>	<u>528</u>
Total Piston	586	152	738
Turboprop Aircraft	105	14(C)	119
Jet Aircraft	<u>184</u>	<u>93(C)</u>	<u>277</u>
Total	875	259	1,134
Per Cent Jet of 4-Engine Piston, above	46%	73%	53%
Per Cent Jet of Total Piston	31%	61%	38%
Per Cent Jet plus Turboprop of Total Piston	49%	70%	54%

(A) Slower, DC-6 and B-377 aircraft with 4-engines.

(B) The DC-7 and Super Constellation aircraft.

(C) Excludes shorter range jet and turboprop aircraft also on order.

From the above, showing the percentage of these jet and turboprop aircraft at 54 per cent of the piston aircraft, it appears that a number of new aircraft have been ordered, and does not indicate a general oversupply of jet and turboprop seats.

It must be understood that although the new aircraft are very fast, and theoretically could produce a tremendous number of available seat-miles, the traveling public's repeated refusal to accept inconvenient departure hours

is expected to apply to the new aircraft, and to prevent practical utilization of the theoretical capacity. This situation also exists today with piston aircraft. The air transportation industry has many examples of public insistence on popular departure times. Chicago Midway and New York LaGuardia Airports are both seriously congested during the 4 P.M.-6 P.M. period each day, but are not at all congested during the midday hours. Airlines have tried many times offering midday flights to avoid this peak-hour congestion, but these flights prove to have uneconomic, light passenger loads and airlines are forced to continue maximum departures at the popular hours.

PASSENGER LOAD FACTOR

"Passenger load factor", the percentage of seats occupied by passengers on revenue flights, is an important index of airline operation. TWA's historical record of passenger load factors and those forecast for 1959-1961, for all Domestic flights in composite, are as follows:

<u>TWA Domestic Passenger Load Factor</u>	
<u>Year</u>	<u>Average of All Flights</u>
1954	63.1%
1955	64.6
1956	64.4
1957	62.8
1958	64.5
<u>Forecast</u>	
1959	67.3%
1960	65.2
1961	65.3

The high load factor forecast for 1959 reflects TWA's favorable competitive position in having a number of jet aircraft in service during the second third and fourth quarters of 1959, ahead of certain principal competitors. Both TWA and American have been averaging well over 90 per cent load factors on

(Draft C. & C. Report-TWA Financial Forecast 1959-61) DRAFT - 38.-

The variations in the forecast revenues per passenger-mile, listed on the preceding page, are the result of small variations in the proportions of transatlantic and east of the gateways revenue passenger-miles estimated for each year.

Other revenues, those generally from mail, express, freight and charter services, have been and are estimated as follows:

<u>Year</u>	<u>Domestic Mail, Express Freight Charter and Miscellaneous (Thousands)</u>	<u>Percentage Change Over Previous Year</u>	<u>International Mail, Express Freight Charter and Miscellaneous (Thousands)</u>	<u>Percentage Change Over Previous Year</u>
1952	\$13,284	-	\$11,970	-
1953	15,070	13.4%	12,115	1.2%
1954	16,083	6.7	13,226	9.2
1955	14,514	-9.8	13,543	2.4
1956	15,472	6.6	14,391	6.2
1957	17,925	15.9	13,179	-8.4
1958	17,932	-	18,613	41.2
<u>Forecast</u>				
1959	\$21,069	17.5%	\$26,455	42.1%
1960	21,026	-0.2	16,765(A)	-36.6
1961	21,500	2.3	16,300	-2.9

(A) Reflects anticipated elimination of military charter flights.

Opinion on Forecast Revenues

As indicated in the foregoing, many hundreds of items have been considered and an equally large number of individual estimates have been made which, in total, comprise TWA's revenue forecast for the years 1959-1961. These revenue forecasts are conditional on many carefully considered premises and assumptions, especially the flight schedule pattern and assignment of aircraft proposed for 1961. From our detailed, independent study, we are of opinion that the estimates of total annual revenue included in TWA's Financial Forecast for 1959-1961 represent a reasonable expectation for each of those years.

CONCLUDING REMARKS

In the preceding sections of this Report, we have:

- a. Outlined the plan of operation which has been developed for TWA's operation for the ensuing three-year period, 1959-1961.
- b. Shown various analyses which we have made of TWA's future plan of operation and financial estimates therefor.
- c. Commented on the many estimates which comprise TWA's Financial Forecast dated May 15, 1959, for the years 1959-1961, generally concluding that they are reasonable.

Our opinion respecting TWA's Financial Forecast is predicated on

- d. A continuing favorable condition of the economy of the United States and Europe, without a disruptive threat of war.
- e. No long-term interruption of operations as a result of strikes, and no important change in air traveler enthusiasm such as might develop if there is a series of serious accidents.
- f. Delivery of each airline's jet aircraft approximately on the schedule which exists today, and these jet aircraft giving performance in accordance with the performance forecasts by TWA's Staff Engineering.

- g. Tariffs remaining at the present general rate level, except for the expected expiration of the jet surcharge for International trips.
- h. TWA's rigid adherence to the principles of the present plan of operation for 1961, most important of which is the plan to limit aircraft to assignments which will produce the optimum net operating income.

Accordingly, we believe TWA's plan of operation for 1959-1961 is sound, and that the income estimates which are a part of the Financial Forecast of May 15, 1959, have good prospect of realization.

Respectfully submitted,

Consulting Engineers

Patterson Bombshell . . .

United to Spend \$50 Million for DC-8

- Expects delivery will start in 1960, possibly 1959, depending on Douglas commitment for USAF transport.
- Jet liners to use J57s; UAL chief calls turboprop talk 'shadowboxing,' says engines are unavailable.

By William J. Coughlin

Los Angeles—United Air Lines will buy a fleet of jet transports this year, probably the Douglas DC-8 with Pratt & Whitney J57 engines, UAL president W. A. Patterson told AVIATION WEEK here exclusively last week.

Asked when he expected to place the order, Patterson answered: "I hope it is in the latter part of the year."

► \$50 Million Plus—Although Patterson did not disclose the number of planes he expects to buy, he said that \$50 million would be a conservative figure for the initial investment United Air Lines is prepared to make for a jet transport fleet. He added that he expects the DC-8 price to be about \$4.5-million apiece, including engines.

Patterson said that he is aiming at a 1960 date to have his jet transport fleet in operation, since it will take about five years to get delivery. However, he indicated that this might be advanced to 1959. Reviewing United philosophy, he added: "I thought a year ago that our decision on jet transports would be made in 1956-1957."

Whereas the jet transport in the past has appeared uneconomical, he said: "In the last six months and from figures I received yesterday from the Douglas Co., it now is encouraging; and over 1,000-mi. stages the jet promises to be better than the DC-6B, which has been very satisfactory. It is that which has convinced me the time has come for jets."

► Rejects Boeing Jet—Patterson indicated that United Air Lines is not interested in buying the Boeing jet transport and said: "We disagree with Boeing in that we don't want an airplane designed for the military; we agree with Douglas in starting with an aircraft designed for commercial use."

Enlarging on this thinking, Patterson indicated that for the USAF jet tanker-transport competition, Douglas has proposed a military version of a commer-

cial design, reversing the normal tendency to try to obtain a military contract first and then modify the design to meet civil requirements.

► No Word from AF—Apparently Douglas has convinced Patterson that it intends to proceed with its commercial DC-8 jet transport even if it loses the Air Force tanker competition. As of last Monday, Patterson said Douglas had received no word as to how it stood in that competition.

However, the manufacturer's commitment would depend upon release that the company could get from the military to build a commercial aircraft aside from tanker-transport production, should Douglas get a USAF order for the jets. ► No Turboprops—The United chief executive told AVIATION WEEK that turboprop transports are out of the picture so far as he is concerned.

"Talk about turboprops is shadow-boxing. There is no engine available," he told this writer. "We will continue to buy the present type of aircraft, such

as the Douglas DC-6B and DC-7, in present service and then we will get a pure jet. "We think that if you buy a turboprop plane today, our competitor can buy a jet and whip you by 100 mph."

Patterson said that United is getting off its present fleet of piston-engine liners in five years. He also disclosed that the airline has any interest in turboprops for short hauls. "We're going to wear out the Convair," he said, and added that United would not operate such an expensive new aircraft into small cities.

► About 75 Passengers—He said he expects the breakeven point on the commercial DC-8 to be about 52% regard to seating, he pointed out. "There is quite a debate about this. We would like to see about 75 passengers. Others want to go to 100 or more."

Patterson believes United will schedule more flights carrying a larger number of passengers and in that way attract a larger total volume than fewer, higher-density services.

Concerning the DC-8's P&W J57, Patterson said: "The J57 by the year (1960) will have hundreds of thousands of hours on it. I have been in contact with the military and they tell me the figures on maintenance of the engine are very fine."



NATO Entry: Mystere Light Tactical Fighter

A lightweight tactical fighter version of the Marcel Dassault Mystere is one of several entries submitted by North Atlantic Treaty Organization to Washington. In order of preference the designs are: Breguet, Mystere, Folland Gnat, Avro and Fiat G. 91.

Recommendations are based on a comparison with NATO requirements for ground attack craft, which is why sonic-supersonic Gnat is third on list. French entries are by Bristol and

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Jets or Turboprops? Airlines Face Big Decision

- Orders must be placed within next few months
- American signs \$65-million order for 35 Lockheed 310s

by ROBERT LOEBELSON

EXECUTIVES of the world's major airlines last week were faced with a decision they had postponed as long as possible. They not only had to choose between turboprop and turbojet transports, but also were compelled to place their orders within the next few months or lose ground competitively.

The stimulant came in the form of two announcements within 24 hours of each other:

• American Airlines signed a \$65-million order with Lockheed Aircraft Corp. for 35 turboprop transports.

• Douglas Aircraft Co., which lost out to Lockheed in the AA turboprop competition, announced it would go ahead with construction of the DC-8.

Continued to follow AA with orders for the very near future were two other airlines included in the so-called Big Four—Eastern Air Lines and United Airlines.

• EAL board chairman E. V. Rickabaugh has indicated Eastern wants at least 100 turboprops delivered by 1960 that are capable of flying 425-450 mph at ranges up to 2,500 miles. He says Eastern expects to pay \$250 million for the planes, plus an additional \$50 million for facilities and equipment to handle the turboprops. EAL's requirement, however, is beyond the capabilities of the Lockheed Electra ordered by American.

• EAL president W. A. Patterson said United's next long-range transport will be a turbojet and that the order will be placed within the next few months. United traditionally has been a Douglas customer, so no one was surprised if it places an order

for another member of the Big Four, Douglas Airlines, had tried to buy a turbo-powered version of the Douglas Constellation, the

the Pratt & Whitney T34 engine could not meet the required performance specifications in time. As a result, TWA placed a \$70-million order for 24 Model 1649s, using Turbo Compound piston engines, in April. The L-1649 can be fitted with turboprops when they become available.

Meanwhile, a report was heard that Howard Hughes, principal TWA stockholder, had started discussing a jet transport with Convair Division of General Dynamics Corp. However, J. G. Zevely, Convair's director of sales and contracts, who admitted that his firm is interested in developing a jet transport for either commercial or military use, said no discussions have taken place. "We would be delighted to have the opportunity to talk about such an airplane with Mr. Hughes, but the rumor that discussions have already started is without foundation."

• The American order for a turboprop was the result of a competition in which Convair, Douglas, Lockheed and Vickers participated (AMERICAN AVIATION, Jan. 31). When the range requirement was increased from 750 to 2,000 miles, only the Douglas and Lockheed entries remained. In ordering the Lockheed model, American (also a traditional Douglas buyer) gave the Bur-

bank company its first AA order since the early 1930s when Lockheed Orions were used in mail service by what was then American Airways.

AA's announcement of the order did not say that the engines used on the Electra would be the 3,750 hp. Allison 501 (T56s) used in Lockheed's design proposal. It was explained that the new plane is designed to use engines as high as 5,000 hp (possibly the Rolls-Royce RB-109) with few modifications.

Features of the Electra include "built-in" loading steps (consequently eliminating the need for "roll-up" loading ramps), provisions either to check or carry luggage aboard, an interior "several inches wider" than any transport now flying and resultant wider seats, and each seat will have its own table for eating or writing.

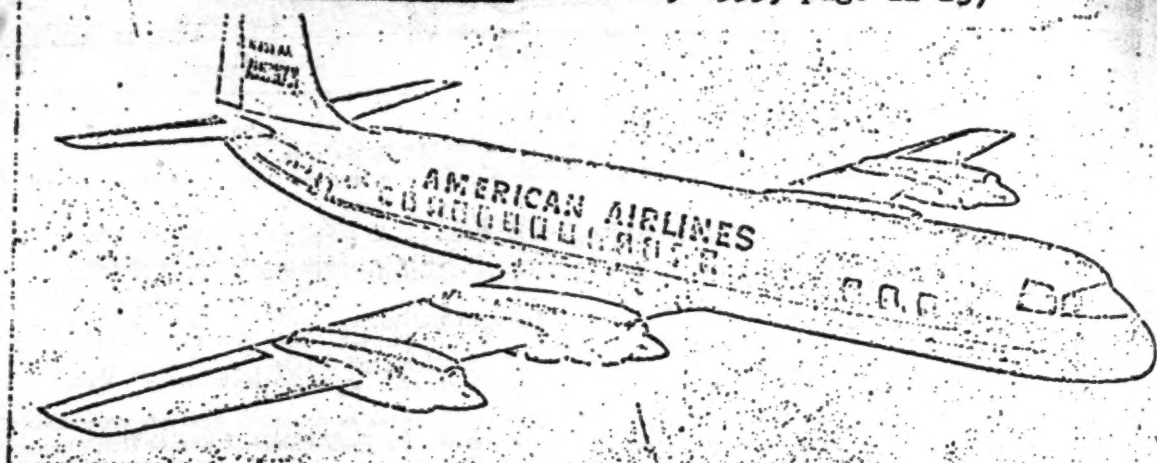
• New soundproofing techniques will reduce noise in the cabin and sightseeing windows (20 by 16 inches) will give passengers improved visibility. Weather avoidance radar and autopilots will be standard equipment. AA also says the reversing propellers will permit the Electra to operate from airports having 5,000-ft. runways without difficulty.

The DC-8, which may also be ordered by American, will be ready for

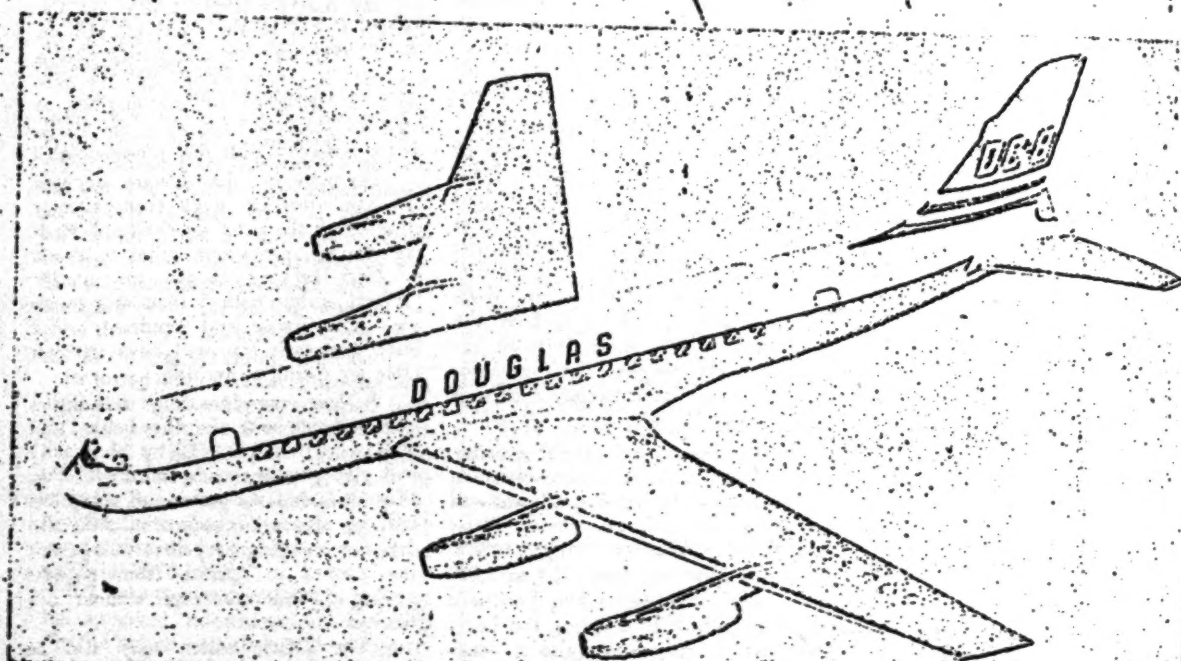
Lockheed Electra Specs

Design and performance data on the new Lockheed CL-310 Electra, 35 of which are to be delivered to American Airlines between the end of 1958 and mid-1959, include:

Gross Weight	22,500 pounds
Cruising speed	over 400 mph
Range	2000 miles
Seating capacity	64 plus 6 in lounge
Fuel capacity	4178 gallons
Cargo space	400 cu. ft. excl. of baggage space
Cargo capacity	4000 pounds
Cruising altitude	Up to 30,000 ft.
Powerplants	Undecided—design based on Allison T56
Length	101 ft. 4 in.
Wingspan	85 ft.
Overall height	34 ft.
Crew	5 (2 pilots, flight engineer, and 2 stewardesses)



LOCKHEED TURBOPROP was ordered in quantity by American Airlines shortly before ...



DOUGLAS AIRCRAFT CO. announced it would go ahead with its DC-8 four-jet transport.

its first flight tests by December 1957, Douglas says, and airline deliveries will start in 1959.

The Santa Monica company made reference to a prototype in announcing the go-ahead signal from the board of directors after a special meeting, indicating that Douglas will follow its usual procedure of starting with a production model. Full certification, according to estimates, could be completed by late summer 1959, and Douglas will probably have 12 or 15 ready for delivery at that time. No price was men-

tioned for the DC-8 but a figure of \$4.5 million is said to be very close.

Douglas has been working up the DC-8 for more than three years and the company's total investment to date, including the cost of preparing for the USAF's jet tanker competition, is placed at "several million dollars."

There are now at least three aircraft companies in the world with long-range jet transports beyond the paper stage:

• de Havilland in Britain with its Comet IV.

707.
• Boeing at Seattle with its Model 707.
• Douglas at Santa Monica with the DC-8.

The British firm is struggling to retrieve its reputation, seriously damaged after a number of accidents to earlier Comets last year, and orders for the Comet IV (except from British Overseas Airways Corp.) have been slow coming in.

Boeing is hampered by its military commitments on the KC-135 jet tanker and is having difficulty in getting

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(American Aviation, June 20, 1955, page 21-23)

version for a commercial version of the advanced 7-7.

Douglas has no obligation to USAF, and therefore appears to be in a position to deliver the DC-8 first.

* Like the Boeing KC-135, the DC-8 uses four advanced Pratt & Whitney 157 turbojets mounted in pods. These engines, Douglas says, will give the DC-8 a cruising speed of 550 mph. The plane will carry between 80 and 125 passengers.

Overseas version of the DC-8 will have a maximum gross weight of 257,000 pounds, the domestic model 211,000 pounds. The plane will be able to operate from present airports "at costs even lower than current passenger

models." Wingspan is given as 134.6 feet, length 140.6 feet, height 40.2 feet.

Typical flight times of the Douglas jet were given as New York-Paris 6 hours 32 minutes; San Francisco-New York 4 hours 43 minutes; San Francisco-Honolulu 4 hours 23 minutes.

Thus, the long-delayed jet/turboprop era has arrived for U.S. and foreign flag carriers. Britain took the lead with the jet Comet and the turboprop Viscount but the two largest U.S. commercial plane builders have closed the gap. From here on, Burbank and Santa Monica are convinced, the world's airlines will have to start placing their orders.

Air Force Asks \$60 Million More For Research and Development

By FRANCIS J. KEENAN

Growing Congressional concern over apparent inadequacies in military research and development programs—highlighted by vigorous Hoover Commission charges—has resulted in some action.

Air Force took the first step last week when it asked the Senate Appropriations Committee for an additional

\$60 million for "emergency" research and development programs.

The request was unexpected, coming as it did with the Administration's special request for funds to finance the AF speedup in B-52 production.

And while no "new money" is involved—it includes authority to transfer \$60 million from another category into the R & D budget and restoration of a \$10 million House emergency fund cut

--the move did reflect awareness of growing Soviet airpower and recognition of Congressional doubts about the program.

The Hoover Commission report landed fortuitously in the middle of the Congressional furor roused by the first, cryptic Defense Department reports May 13 of Soviet gains. The Commission study, presumably already prepared, arrived two weeks later. In the meantime, several Senators were voicing complaints about U.S. progress in the development of advanced aircraft and missiles.

Sen. Stuart Symington (D-Mo.) estimated the USSR was ahead in work on the "ultimate" weapon, the Intercontinental Ballistic Missile. Sen. Richard Russell (D-Ga.), chairman of the Armed Services Committee, asserted that Defense R & D programs were "too scattered" but "might be sufficient" if better coordinated.

Sen. Henry M. Jackson (D-Wash.) emphasized qualitative requirements in secret hearings before his Military Applications subcommittee of the Joint Atomic Energy Committee.

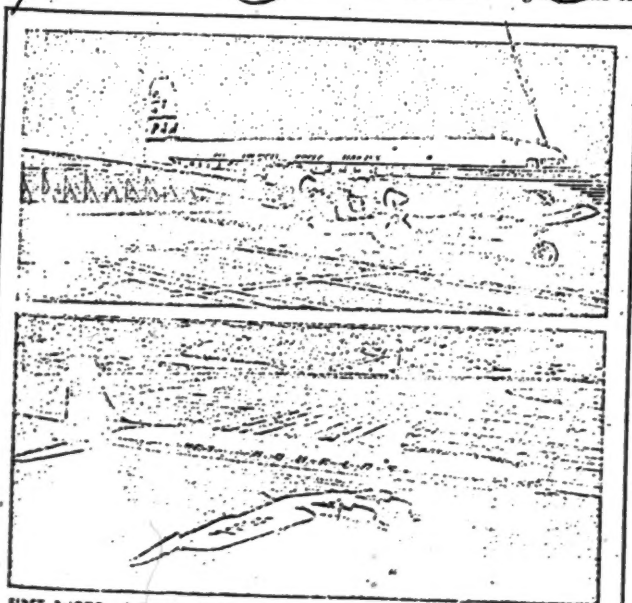
Sen. Warren Magnuson (D-Wash.) blasted the Defense Department for its "failure" to recognize the role of R & D in maintaining airpower, which he said was reflected in too little training of scientists and too modest programs in developing new weapons and procedures.

The Hoover Report appears to confirm and elaborate on these charges. It warns that "the Armed Services are not sufficiently daring and imaginative in their approach to radically new weapons and weapon systems." It said even stepped-up R & D programs may be too late to maintain U.S. supremacy in weaponry, while current levels are entirely inadequate.

It maintains that Defense Department organization failed to provide sufficient opportunity for new approaches in weapon development. And it notes that "informal proddings" by civilian scientists and technologists accounted for most advances.

The Commission emphasizes that U.S. defense efforts depend basically on the success of its research programs. Therefore, it recommends these things are needed:

- Increased integration of R & D programs.
- Better personnel policies designed to keep military and civilian experts on the job.
- Greatly increased attention to basic research.
- More effective utilization of the nation's scientific and technical communities and private research facilities.
- An overall strengthening of the



FIRST PHOTO of Douglas DC-7B, pictured here with earlier standard DC-7, shows new wing section tanks fitted on Pan American's aircraft. Official difference between DC-7 and DC-7B is new Wright DA4 Turbo Compound engine. PanAm's DC-7B's will have the extra-range tanks, but Eastern Air Lines' aircraft will not. PAA's airplane is approved for 126,000 gross takeoff weight, whereas EAL's is approved for 122,200 and Panagra's for 125,000 pounds.

Airlines Weigh Jet Decision: DC-8 or 707?

Design vs. delivery advantages pose competitive problems; Pentagon security policy hurts foreign carriers.

LARGE-SCALE jet transport buying spree by U.S. and foreign airlines has been temporarily sidetracked by behind-the-scenes jockeying by carriers for best competitive position in the future jet race.

Although firm jet orders from major U.S. airlines are still expected within weeks, and most certainly before the year-end, competitive aspects of the two available aircraft—Boeing's 707 and Douglas' DC-8—have created an unprecedented equipment procurement situation.

Carriers such as American, Pan American, Eastern and United, representing a market for about 100 jets, are weighing answers to the big question: Which aircraft will it be? Forcing the competitive equipment aspects right close to home is a fifth big airline, Trans World Airlines, historically a lone wolf in aircraft buying through its principal stockholder, Howard Hughes.

What the four carriers are now pondering boils down to a choice between the airplane they favor and a delivery schedule that will put them up front in jet operation.

• If they decide on the DC-8, fear that Hughes would immediately step into the picture with a Boeing 707 order for TWA and gain a 1½ to two-year competitive edge in jet introduction in airline service.

• Should the decision favor the Boeing 707 to erase this threat, apprehension continues to exist as to whether they are getting the best jet buy for commercial airline service. First sign of this uncertainty came to light recently in a statement by United Air Lines' president W. A. Patterson.

Commenting on the relative merits of the two aircraft, Patterson noted that although the Boeing 707 prototype has been flying for a year, it has been built for military order. The DC-8, he said, is still in the design stage and is more flexible for tailoring to airline requirements.

General feeling among airline engineers is that any transport design being built primarily for military use is bound to suffer many hidden penalties in weight and performance when adapting it as a commercial transport vehicle.

A second factor that makes carriers hesitant to go "whole hog" for the 707 is the wealth of transport experience they have amassed in the postwar period with Douglas' equipment, as contrasted

How Pentagon Releases Jet Engine Data

New Pentagon policy of July 22 (Directive 500.10) sets this release schedule for data on turbojet, turboprop and turboshaft engines for commercial operation. Directive provides that changes in the international situation may either accelerate or retard release of data on a particular engine.

Type of Release	To Cleared U.S. Mfgs.	To Cleared U.S. Airlines	U.S. Airline Operation	Foreign Airlines	Foreign Engine & Airplane Mfgs.
Prelim. Performance & Installation Data	After 60-hr. FRT	After 150-hr. ET	1 yr. after 150-hr. ET	1 yr. after 150-hr. ET	1 yr. after 150-hr. ET
Complete Performance & Installation Data	After 80-hr. FRT	1 yr. after 150-hr. ET	3 yrs. after 150-hr. ET	3 yrs. after 150-hr. ET	3 yrs. after 150-hr. ET
Delivery for Prototype Aircraft (Opn. and Maint. Data Only)	After 150-hr. ET	1 yr. after 150-hr. ET	2 yrs. after 150-hr. ET	3 yrs. after 150-hr. ET	3 yrs. after 150-hr. ET
Delivery for Production Aircraft & To Airlines	3 yrs. after 150-hr. ET	3 yrs. after 150-hr. ET	3 yrs. after 150-hr. ET	4 yrs. after 150-hr. ET	4 yrs. after 150-hr. ET
Production & Manufacturing Drawings	4 yrs. after 150-hr. ET

Notes: 60-hr. FRT—60-hour preliminary flight test rating; 150-hr. ET—service approval of 150 hr. endurance test portion of engine qualification test.

with only limited experience by a few carriers with Boeing 377 Stratocruisers.

A third big element in the whole competitive scheme is that the high cost of jets makes it most profitable for the big carriers to deal with one manufacturer in order to realize the lowest per-unit costs possible. However, failure of one major airline to go along, as in the case of the Hughes-TWA combine, relegates the matter of pooled orders to an almost insignificant role.

• As a result, heads of two major airlines, C. R. Smith of American and Juan Trippe of Pan American, are reportedly in day-to-day discussions attempting to resolve their future course of action in an investment that could make or break their respective companies.

On the foreign airline scene, although it is taken for granted that orders from abroad will closely follow those of U.S. carriers, another obstacle has loomed. Negotiations for jet transports by these airlines, because of military security limitations of the classified Pratt & Whitney J57 engine, do not enjoy the same free exchange of performance data as do those of U.S. airlines.

For example, in dealing with a foreign airline, Boeing is permitted to

give overall performance data on the 707 with J57s but cannot give details on engine performance. In theory, however, Boeing today can sell 707s to foreign airlines complete with J57s and the carrier could find out all there is to know about the engine.

By way of contrast, security-cleared U.S. carriers can learn all there is to know about J57 engine performance, a situation which foreign carriers feel represents a decided competitive advantage in negotiations for jet transports.

Attitude among aircraft manufacturers, here, as expressed by one official, is that the disadvantage, if it exists at all, is purely academic. Reason is that even if a foreign carrier were to order a jet today, it couldn't be made available until long after security wraps have been removed from the engine in question.

• The fact remains, however, that newly adopted Pentagon policy, which sets an arbitrary date on when classified jet engine data can be released, (see chart) gives U.S. carriers a full year's edge over foreign airlines in access to performance information as well in eligibility for delivery of any classified engine.

In the case of the J57 engine, which

AMERICAN AVIATION

September 12, 1955

DX 26, page 2

(American Aviation, Sept. 12, 1955, pp. 84-85)

received service approval of its 150-hour endurance test in July 1953, the magic date for release of data to foreign airlines comes in July 1956 and delivery of 157s to these carriers can start in July 1957. Since both dates preclude any possible delivery of jet planes to either U.S. or foreign airlines, any advantage to U.S. operators by the one-year edge in Pentagon timing is obviously nullified.

Big question, however, is whether this will continue to be true of future engine developments. Since most foreign carriers now involved in the purchase of U.S. transports are similarly associated with the U.S. in mutual defense activities, there appears to be equal question whether the penalty imposed on foreign airlines is not one borne of U.S. airline political pressures rather than of military necessity.

Last question to be answered is: Does the policy penalize U.S. engine producers in their negotiations with foreign operators? It has long been accepted that Pentagon restrictions on U.S. jet engine information have been an obstacle for manufacturers competing with British designs, and the arbitrary penalty imposed by the new policy might well mean the difference between selection of U.S. or British designs on aircraft of the future. • • •

CAB Resumes Nonscheduled Hearings Next Month

Civil Aeronautics Board will resume hearings October 5 in the Large Irregular Air Carrier Investigation which already has produced a record 30,000-page hearing transcript.

New hearings will be on the qualifications of 30 of the 60 nonscheduled airline applicants who did not previously get an opportunity to testify as to fitness, ability, etc. Examiners Ralph L. Wiser and Richard A. Walsh have tentatively scheduled the new hearings for Washington, Los Angeles, and Seattle.

In addition, the other 30 applicants who were heard on individual qualifications at previous sessions, will get a further opportunity to bring their cases to date, either through supplemental briefs or possibly on the witness stand.

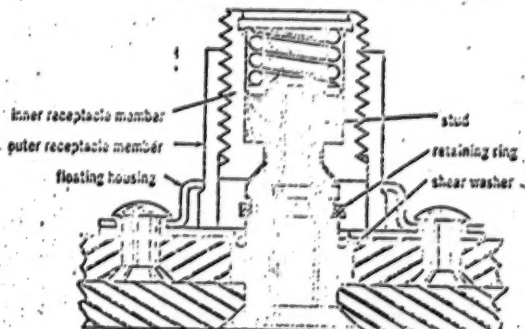
Meanwhile, the Board is expected to issue its decision soon on the policy phase of the case in which the nonscheduled industry's role for the next five years, at least, will be explained. Purpose of the new hearings is to determine which of the 60 applicants will be authorized to fill the spot outlined in the policy decision.

SEPTEMBER 12, 1955

New High Performance Fastener

EXCEEDS ULTIMATE TENSILE and SHEAR LOADS OF NAS 547

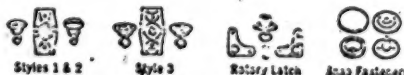
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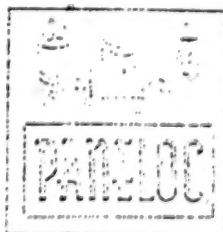
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West Coast Talk . . . By Fred S. Hunter

- DC-8 power problem puzzler for Douglas.
- Augmented J57 engine behind schedule.

IT HAS BECOME an open secret in Santa Monica that Douglas is confronted with a perplexing DC-8 power problem. It has been re-evaluating all its performance data on the projected jet transport.

It will be recalled that last June when Douglas broke out so dramatically with its DC-8 go-ahead announcement, it spelled out plans for two versions, one a domestic model having a gross takeoff weight of 211,000 pounds, the other an overwater model to tip the beam at 257,000 pounds. The company reported it would be ready for airline deliveries in 1959.

At that time, there was no hint of any timetable differences between the two versions. Now, however, it seems the augmented J57 engine Douglas was counting on for its long-range, overwater model won't be ready until a year or more later than a less-augmented J57 suitable for the domestic version. This would put the start of deliveries on an overwater DC-8 back to 1960. And by that time—who knows?—a commercial version of P&W's new, higher-thrust J75 might very well be pushing into the picture.

No augmentation would be required for the J75. On the other hand, it is a heavier engine. Also, it will be more expensive. Douglas currently prices the J57-powered domestic DC-8 at \$4,600,000, the overwater model at \$4,650,000. With J75s, the overwater version's price would have to be increased about \$300,000.

The J57 complication centers around the necessity for extensive water augmentation to up the take-off thrust if these big jet transports, like the Boeing 707 and the Douglas DC-8, are to be capable of operating long-range without throwing away all the payload. Latest reports from Seattle say Boeing is allowing for 450 gallons of water for thrust augmentation for the 707.

Information from Santa Monica indicates Douglas contemplates a somewhat lesser quantity for the domestic DC-8, but substantially more

for its overwater model. Extensive augmentation like this compounds the troubles of the engine-maker. It adds to the engine durability problem. To illustrate, 39 gallons of fluid fills the water injection needs of the Douglas DC-6B. A 22-gallon tank suffices for Convair's twin-engine 440. It's a big step up to 450 gallons and more.



Hunter

All this has an important bearing on an important customer—P&A American. Word has been about for some time that Juan Trippe, PAA president, has had his contract signing fountain pen all filled and the cap off, ready to sign on the dotted line for 25 planes. But not for deliveries a year or more behind a domestic carrier or for an airplane possibly having less performance than a competitor. Thus the predicament as Boeing and Douglas jockey for key customers in the two markets.

In a similar quandary, incidentally, is Convair on its Model 140 design for TWA, which has to have aircraft suitable for transatlantic as well as domestic schedules. There are even hints from San Diego that Convair may decide its best course is to bow clear out, at least for now.

P&W's J75 is programmed into both Convair's F-102B and North American's F-107 . . . Motorola's Phoenix plant is second source on new guidance system for the Navy Terrier . . . Designation for the new Nike is Nike B (not Nike 2) but the original design is simply the Nike, not Nike 1 . . . Wonder if it is true the Institute of the Aeronautical Sciences actually is considering building an office building on the back lot of its Los Angeles facility to lease to aviation firms and allied interests in the area?

McCulloch Motors bought a Super 16 Beech from Norman Lenson, its first venture in an executive aircraft . . . Southern California section, with more than 500 members, is the largest unit in the American Rocket Society . . .

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(Pages from American Aviation, Oct. 24, 1955)

DX 28

INDUSTRY NEWS

PAA Orders Both Boeing and Douglas Jets

- Rush of orders from other major U.S. airlines expected as result of Pan Am's \$269-million decision.
- First delivery of 707s scheduled for December, 1958; DC-8s to start arriving year later.

By WILLIAM V. MENZIEY

PAN American World Airways "broke the ice" this month with a \$269-million order for 45 American-built jet transport aircraft, all of which are scheduled for delivery within the next five years.

As tension mounted among airlines in the race to be the first U.S. jet purchaser and between manufacturers to be the first U.S. jet seller, Pan Am solved both races by ordering 25 Douglas-built DC-8s and 20 Boeing 707s.

The order was expected to touch off a rash of orders from other major U.S. lines such as United, American, Eastern and possibly TWA. Because of its split nature, it was also seen as assuring virtual success for both manufacturers in the commercial jet field, since Pan Am alone has given each about one-third of the business said to be needed for break-even projects.

• First deliveries by Boeing will start in December, 1958, ending in November, 1959. In December, 1959, Douglas will start delivering DC-8s to

Pan Am, with the order scheduled for completion in January, 1961.

The Boeing 707s will be powered by four Pratt & Whitney J57 engines, cost a total of \$109 million, including spares, and will carry 104 first-class passengers and 125 in tourist configuration.

The DC-8s will use more powerful P&W J75 engines, cost a total of \$160 million including spares, and will carry 108 first-class or 131 tourist passengers.

Both planes, according to Pan Am, are designed to cruise at 575 miles an hour at 30,000 feet. By way of emphasizing these facts, Boeing flew its prototype 707 on Oct. 16 from Seattle to New York in record time of 3 hrs., 58 minutes.

• Pan Am intends to place the new jets in transatlantic, South American, and transpacific services in the five-month period beginning December, 1958.

Sample times on proposed new schedules are: New York-Paris, 6 hrs., 35 minutes; New York-Buenos Aires, 11 hrs., 15 minutes, and Tokyo-Seattle

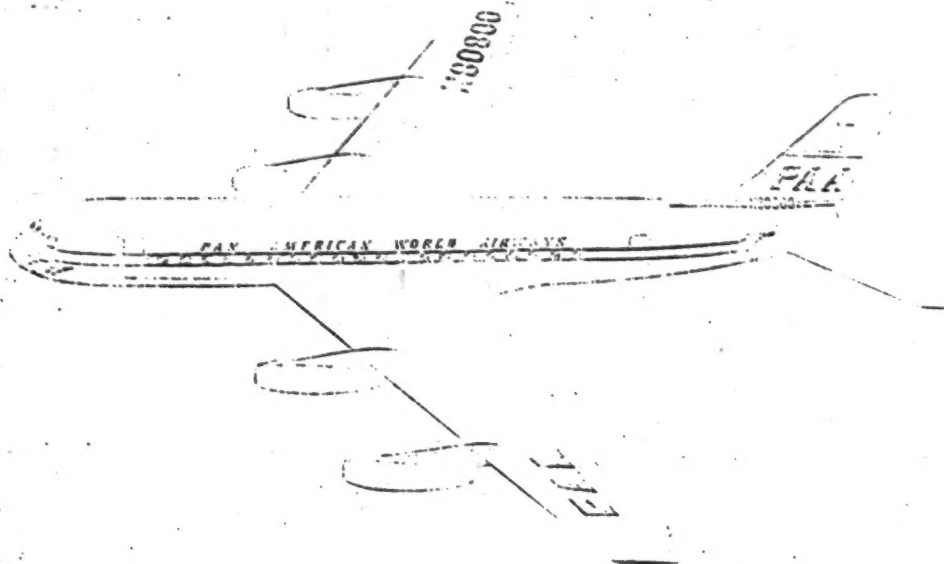
8 hrs., 32 minutes.

Donald W. Douglas, president of Douglas Aircraft, hailed his firm's deal with Pan Am as "the largest and most significant single contract in the history of commercial aviation . . . opening a new chapter in global aviation and bringing the jet age closer to the lives of millions throughout the world."

The Boeing-Pan Am contract "marks the beginning of a new era in air transportation," according to Boeing president William M. Allen, who added: "Introduction of the 707 jet Stratoliner on Pan American's routes will, in effect, make the world 40% smaller."

• Pan Am's president, Juan T. Trippe said the new order plus PAA's orders outstanding, which add up to a total aircraft commitment of \$357 million, is "concrete evidence of Pan American's faith and confidence in the continued expansion of sound two-way international trade as well as greatly increased tourist travel between the U.S. and the 74 friendly foreign nations

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Douglas DC-8 as it will look with Pan American markings.

which are regularly serviced by Pan American."

Vice President Richard Nixon, Secretary of Commerce Sinclair Weeks, Air Force Secretary Donald A. Quarles, and CAB Chairman Ross Rizley were among important Federal officials who hailed the Pan Am announcement as a tremendous lift to Aviation and a significant contribution to the national economy.

But while Pan Am, backed by a Douglas statement that the DC-8 purchase is the "first firm agreement for U.S.-built jet transports," appeared first in line, many other U.S. carriers gave evidence that little time advantage would be surrendered to competitors in the race.

Foremost in point of time, if not in size of order, was National Airlines, which still insists it has the first commitment for the Douglas DC-8. Last August, testifying under oath at CAB hearings in the New York-Florida Case, NAL president G. T. Baker said his company has placed orders for six DC-8s costing about \$36 million.

Further, Baker said National has "firm delivery dates" for four DC-8s in 1959 and two in 1960. Whether Pan Am or National was first appeared in dispute on whether you wished to rely on a written contract, such as the one Pan Am entered with Douglas, or a verbal contract, which Baker says

National entered with the DC-8 manufacturer.

United Air Lines was scheduled to make its recommendations to its directors on October 25. The Airlines' officials held final conferences with Boeing and Douglas in mid-October. UAL president W. A. Patterson, J. A. Herlihy, v.p.-engineering and maintenance, and W. C. Mentzer, chief engineer, headed the UAL team in the final talks.

Eastern's board chairman, E. V. Rickenbacker recently said his company has allocated \$125 million for 20 jet transports but had not yet made its mind up as between the DC-8 and the 707. A decision is expected at any time.

American, normally a heavy Douglas purchaser and a proud possessor of many "firsts" when it comes to new aircraft types, has not yet made its mind up and only last week had a team of engineering experts actively studying the 707 in Seattle.

Both American and Eastern, of course, previously announced so-called "gap-bridging" orders for turboprop Lockheed Electras.

Trans World Airlines, a big question mark, is rumored interested in the 707 but such rumor must be considered as the purest speculation at this time.

Latest carrier to evidence jet interest was Continental Air Lines, whose president, Robert Six, was at Douglas in mid-October checking details with the DC-8 project group. Continental's interest in a jet transport is said to center around its equipment interchange operations.

Actually, none but the smallest U.S. lines can be eliminated from the race which, in terms of domestic orders alone, gives promise of a \$1 billion pot to be divided between the two manufacturers. And this does not take into consideration inevitable orders from foreign airlines.

What effect increased orders have on pricing of the new jets remains to be seen. Early reports indicate the basic price of the Boeing 707 of \$4.3 million will be adjusted downward to \$4.1 million if 65 airplanes are sold.

Price on the DC-8 powered with P&W J75 engines reportedly is just over the \$5 million figure, or about \$400,000 more than the basic price of the J57-powered DC-8.

The substantial cost of these planes, when related to past prices for piston-engined aircraft, is largely responsible for the cat-and-mouse game being played by various airlines.

Particularly adroit has been UAL's Patterson, who has alternately hinted at UAL leanings toward the DC-8 and the 707, and even suggested that U.S.

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(Pages from American Aviation, Oct. 24, 1955)

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companies may pool their orders with a unit price gain as a major advantage.

Some indication of the amounts now required to stay in the competitive airline race can be obtained from the recent Pan Am order and that announced earlier by Eastern. Pan Am's total of \$357 million for new equipment and Eastern's for \$350 are each about equivalent to the total assets of the domestic trunkline industry ten years ago.

In fact, the combined net assets of the nine regional trunks and 13 local service airlines in 1954 was not as high as either of the two aircraft orders.

With such enormous amounts in-

involved in each airline's order, therefore, even a 5% reduction in unit price, such as reportedly is contemplated by Boeing for quantity production, means substantial savings to the purchasers.

For example, the purchaser of 20 707s would gain \$4 million or virtually the price of one additional plane if the 65-plane goal is exceeded. The same would hold true for Douglas purchasers, of course, if that firm is thinking along the same lines.

But while extreme optimism has invaded the U.S. manufacturing picture, the potential U.S.-airline market for British de Havilland Comet jetliners appeared to be waning.

Pan Am's Boeing and Douglas orders appeared to wipe out PAA's previous order for three Comets. PAA's only comment was that it continues to be interested in de Havilland jet transports and there are "certain confidential understandings" between the two companies looking toward a "fruitful outcome."

There is, however, general industry belief that PAA's contract with de Havilland contained a clause nullifying the order if U.S.-built jets should be available for delivery at the same time.

Thus has the jet age in this country passed the talking stage. ♦♦♦

British Make New Bid For Turboprop Market

- Canadair, Bristol and Convair may join forces in production of Bristol Super-Britannia.
- British European Airways negotiating for fleet of Viscount 900s.

The role of British aircraft and engine producers as key contenders in the future turboprop transport market was further shaped last week in two major developments.

Canadair, Ltd. disclosed first details of a projected three-nation tie-up which it would join with Britain's Bristol Aeroplane Co. and Convair in the U.S. in the design and production of the Bristol Super Britannia turboprop.

British European Airways announced it is negotiating with Vickers-

Armstrongs Ltd. for a fleet (believed to be 30) of new Viscount 900 Vanguard turboprops for 1960 delivery.

Together, the new projects put British-designed turboprops powered by British engines in two open slots in the future transport picture.

The tri-nation Super Britannia project, if it materializes, will offer a 500-mph turboprop in the long-range, high-capacity category to fill the gap between the Lockheed Electra turboprop and Boeing/Douglas jets. On the other extreme, the new Vanguard

provides a 425-mph turboprop for high-density operation at ranges up to 2,500 miles.

Deal Not Yet Final

Although the Canadair-Convair-Bristol deal is not yet finalized, Canadair officials confirmed that it is currently "under intense study." But the project target, calling for 1960 delivery of the Super Britannia, virtually dictates that final decisions will have to come soon if the aircraft is to develop as a major entry in current airline re-equipment programs.

Best indications are that the plan would call for final assembly of the aircraft in the U.S. by Convair from components made partly at Convair and partly in Montreal by Canadair. In addition, other components would be imported from Bristol in England, as the new project does not affect that company's plans to build the Super Britannia in its Filton, England plant.

Use of Bristol's BE.25 "super-charged" turboprop in the Super Britannia also makes probable the entry of a fourth major manufacturer, Curtiss-Wright Corp., in the project. Top officials of Convair and Bristol told AMERICAN AVIATION that both the engine and powerplant would have to be Americanized to give the Super Britannia its best chance of volume selling on the world market.

Current license agreements between Bristol and Curtiss-Wright are understood to give C-W "first refusal" on several Bristol engines, including the BE.25, thus making it the logical pro-

Latest entry in turboprop transport field is new Vickers 900.

Both 707s and DC-8s

PAA Orders First U. S. Turbojet Fleet

Pan American World Airways last week signed contracts totaling \$269 million for the first major American turbojet airline fleet, ordering 25 Douglas DC-8s and 20 Boeing 707s.

Boeing's jet Stratoliners will be delivered first, beginning in December 1955. Within five months thereafter, Pan American says it will place these American-built, American powered transports in service on its trans-Atlantic, South American and trans-Pacific routes. Boeing will complete its deliveries by Nov. 1959.

Deliveries of the Douglas jet airliners are scheduled to begin in December 1959 and to be completed by January 1961.

Both aircraft will provide 550 mph. transoceanic and transcontinental service. The 707, larger and faster than the prototype now flying, will have a range of more than 5,000 miles non-stop. Douglas states that the DC-8 will be "capable of nonstop operations in either direction between New York and London."

Both are designed to cruise up to Mach .88, and the contracts guarantee cruising speeds of 575 mph. at 30,000 ft. altitude.

Pan American lists these potential flight times with the new jet airliners:

New York to Paris, 6 hr. 35 min.; New York to Buenos Aires, 11 hr., 15 min.; Chicago to London, 6 hr., 45 min.; Tokyo to Seattle, 8 hr., 32 min. and Honolulu to San Francisco, 4 hr., 30 min.

The Boeing 707s, powered by Pratt & Whitney J57 engines, will carry 104 passengers in standard (first class) configuration and 125 in tourist. Each airplane will cost just under \$7 million.

Douglas' DC-8, with a wing area approximately 7% greater than the 707, is designed to carry 108 passengers in standard seating arrangements or 131 tourist class passengers. Pan American says the DC-8 will have "slightly greater range and will be equipped with a larger type Pratt & Whitney jet turbine engine," the P&W J75 (commercial designation, JT4).

Douglas said that its August announcement of the DC-8 performance was based on the J-57, but "the Pan American planes covered by the present contract are designed to utilize jet engines of even greater power and versatility as and when they become available for commercial use."

The DC-8 purchase calls for expenditures in excess of \$160 million for the 25 aircraft and spares.

Jet turbine silencers and reverse thrust mechanisms will be installed. With the silencers, Juan T. Trippe, president of PAA, says, "The new jets will make little more noise on the ground than present piston-engined planes." Reverse thrust will be used for braking effect after landing.

The order for jet airliners does not effect the existing \$58 million order for 33 DC-7Cs with turbo-compound engines. The first of these will be delivered in the spring.

The combined commitments, totaling \$357 million for new flight equipment, are "evidence of Pan American's faith and confidence in the continued expansion of sound two-way international trade as well as greatly increased tourist travel between the United States and the 74 friendly foreign nations which are regularly served by the Pan American Clippers," Trippe stated.

Pan American is non-committal about its long-standing, and perhaps still existing, order for de Havilland Comet 3s. In a statement to AVIATION WEEK, the company said: "PAA has a continuing interest in the de Havilland jet program. Certain confidential written understandings exist between the two companies looking toward a successful outcome."

NEWS DIGEST

U. S. Navy last week grounded the North American FJ-3 Fury jet fighter pending modification of its Wright J65 turbojet engine to prevent overheating.

Convair is discussing a 500 mph. turbojet airliner with Canadair (another General Dynamics division) and Bristol Aeroplane Co. The design for delivery in 1960 probably, is the advanced, thin-wing version of the Bristol B. 2 (AW Oct. 25, 1955, p. 13). It will be powered by the Bristol B. 2. 25 engines. Canadair is building a military reconnaissance version of the Britannis for RCAF.

A new and complete helicopter control system providing full all-weather operating capability has been developed by Sperry Gyroscope Co., division of the Sperry-Rand Corp. Sperry has just received clearance from USAF to announce details.

United Air Lines September traffic reached a new record for the month with 166,644 and revenue per passenger mile 9,693,600 passengers, 10 and 19% increase, respectively, over the same

period last year. Freight shipments were up 35% to 4,098,000 ton-miles, express up 27% to 1,276,000 ton-miles and mail up 6% to 2,007,000 ton-miles. Late summer vacationists and school returnees are credited for the traffic increases.

Slick Airways carried a record 4,320,379 ton-miles of airfreight on domestic scheduled service in September, 14% more than the same month last year. Figure does not include the carrier's domestic and overseas charter flights. George M. Bain, Slick executive vice president, predicts a 30% increase in the airline's volume this year over 1954 and a 20% increase in airfreight for all airlines.

Wright Brothers Lecture will be delivered by Raymond L. Bisplinghoff on Dec. 17 in the auditorium of the U. S. Chamber of Commerce Building, Washington, D. C. The lecture is sponsored by "The Institute of the Aeronautical Sciences."

Plastic Stop Nut Corp. of America reports \$1,101,750 profit after federal taxes for nine months ended Aug. 31.

Net sales totaled \$14,941,443 compared with \$17,086,429 for the same period last year. Firm has voted a 25 cents common dividend payable Nov. 1 to holders of record Oct. 15.

Prototype Saab delta fighter, reportedly capable of 1,000-mph. speeds, is scheduled to fly soon at Linköping, Sweden. Developed as a result of flight studies with the tiny half-scale Saab Draken, the new multi-engine fighter is about 50 ft. long and has a span of approximately 35 ft. According to present estimates, orders for the delta will total some \$150 million and is designed to provide the backbone of the Swedish Air Force in the late 1950s and early 1960s.

Bendix Radio settled its 59-day old strike last week by giving the International Association of Machinists (IAM) a six cents hourly raise with another six cent increase to follow in September 1956. The settlement, which may serve as a pattern for at least part of the avionics industry, includes a seventh paid holiday and improved pension and insurance plans.

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(American Aviation, Nov. 7, 1955 pp. 23-25, 27-28)

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VOL. 19, NO. 12

Jet Race Quickens; UAL Orders 30 DC-8s

- Transport equipment on order may pass \$1-billion mark before year is out.
- Biggest buying drive in industry history gets under way.

By ANTHONY VANDYK

JET and turboprop transport activity has moved further into the limelight. Less than two weeks after Pan American set the pace by ordering both the Boeing 707 and the Douglas DC-8, other developments came in rapid succession.

Before the year is out, transport equipment on order may well pass the \$1 billion mark. Without question, the industry is in the midst of the biggest equipment drive in history.

The scramble for delivery positions is hectic. The destinies of many airlines may well hinge on how far up or down they may be on delivery schedules with relation to competitors.

More important than the actual order announced to date is the back-stage maneuvering and negotiations now in progress. But the following are the latest tangible developments:

• United Air Lines became the first U.S. domestic carrier to order jet transports with the purchase of 30 Douglas DC-8s at a total cost of \$175 million for delivery in May 1959.

• Braniff Airways disclosed it is ordering four DC-8s (with an option on four more), has been given delivery positions by Boeing should it decide to order the 707 and is clicking for eight turboprop Lockheed Electras.

• Eastern National Airlines announced it had placed a firm order for six DC-8s, which were scheduled for delivery in early 1959. There were also reports that National was close to a decision on the purchase of a number of Vickers Viscounts. Earlier this year National announced a \$85-million expansion program which included a provision for approximately 12 turboprop aircraft of undesignated make.

• At least half a dozen U.S. and as many foreign airlines were negotiating with Boeing, Douglas and Lockheed for delivery positions.

United plans to put its DC-8s in service in November 1958. They will be powered by P&W 375s while the 25 DC-8s ordered by PAA for delivery starting December 1958 will have the more powerful P&W 375. United's DC-8s will cruise at 550 to 575 mph. They will be able to seat 100 first class or up to 140 coach passengers and carry 7,000 lbs. of mail, express and freight.

United's president, W. A. Patterson, said: "Our studies conclusively indicate that on the basis of present-day costs, the per-seat-mile cost of operating the jet plane will be less than that for the latest piston-engine aircraft; this, combined with the traffic volume expected to be generated by the greater speed and comfort of the jet, will assure us of the profits necessary to support this new investment."

Meanwhile, the ever-present problem of the choice of new equipment is fast developing into a nightmare for airline managements the world over. At the International Air Transport Association's annual general meeting in New York last month it was generally conceded that never in commercial transport history has the dilemma been greater. Loaded with brochures and besieged by herds of aircraft and engine salesmen, harassed top executives of carriers large and small were asking each other for advice on what to buy and when to buy it.

Douglas Announces Program

In the few months leading up to the New York meeting there had been news of various types to upset the most widely established equipment program Douglas announced its program to build

the DC-8; Lockheed unveiled its turboprop Electra with the announcement of an order from American; KLM, previously loyal to American equipment, ordered the Viscount; SAS and several other carriers gave the Convair-Liner a new lease of life buying the Model 440 Metropolitan; Eastern ordered the Electra.

On the negative side it became clear that the British were out of the running in the long-haul jet field; the British government has decided against putting the Vickers 1050 into production while the Comet has lost the support of all carriers except BOAC.

• Shortly before the New York IATA meeting opened the biggest news of all broke: PAA ordered the Boeing 707 and the DC-8. A few days later it became known that Canadian, Convair and Bristol were working on a joint design for a 500-mph turboprop transport for 1960 delivery. On October 17, opening day of the meeting, Vickers unveiled its turboprop Vanguard while Douglas and Lockheed revealed much new information on their DC-8 and Electra, respectively. By increasing the wing area, the Electra has been made into a 3,000-mile range aircraft.

During the week-long IATA conference it was also disclosed that Canadian Pacific Airlines has ordered the Britannia and that Air France had decided to buy the SNCASE Caravelle jet.

These are only some of the developments which perplexed the executives attending the IATA sessions. It was clear that while a few of these developments were expected many came as a rude shock to the vast majority of the airline chiefs present in New York. The PAA order for 25 DC-8s and 25 Boeing 707s obviously caught competing European carriers off guard, as did

JET/TURBOPROP BOX SCORE

In the race so far for an estimated \$7-billion jet and turboprop transport market are three U.S. manufacturers—Douglas (DC-8), Lockheed (L-1049) and Boeing (707)—and four foreign producers—Vickers-Armstrongs (Viscount and Vanguard), Bristol (Britannia), de Havilland (Comet 4), and Cessna (Caravelle). Here's how orders by major world carriers shape up at deadline:

Item Orders	Airline	Type	Number	Delivery
PAA		707	20	December '53
PAA		DC-8	25	December '59
United		DC-8	30	May 1959
American		Electra	35	August 1958
Eastern		Electra	40	August 1958
Capital		Viscount	60	In progress
National		DC-8	6	Early 1959
BOAC		Britannia	33	December 1955
BOAC		Comet 4	20	Fall 1958
BOAC		Viscount	12	1957
BEA		Viscount	49	In progress
TCA		Viscount	25	In progress
Air France		Viscount	12	Completed
Trans-Australia		Viscount	12	In progress
KLM		Viscount	12	1957
Canadian Pacific		Britannia	3	1957
El Al		Britannia	3	March 1957

Pending and Currently Probable

Eastern	707 or DC-8	20
Eastern	Electra	30*
American	707 or DC-8	about 30
Braniff	DC-8	4 and 4*
Braniff	Electra	8*
Western	Electra	7
Northwest	707 or DC-8	8-10
National	Viscount	12
Continental	Viscount	15*
Canadian Pacific	Britannia	3*
El Al	Britannia	3*
Air France	707 or DC-8	about 10
Air France	Caravelle	12
KLM	DC-8	about 10
SAS	DC-8	5-7
Japan Air Lines	DC-8	about 3
Swire	DC-8	about 3
BEA	Vanguard	30

Note: Space limitations prevent inclusion of all Viscount customers; 236 Viscounts have been ordered to date and contracts for more are under negotiation.

* Option.

suffered a disadvantage in not knowing the airline men as well as did the Douglas representatives, who have made friends of many a top executive in the course of doing business with them for years.

Realizing that many airline presidents and high executives are confused by an abundance of technical data, Douglas tried to make its DC-8 presentation at New York as simple as possible. The company stressed that the DC-8, cruising at 350 mph, will carry more payload further than any commercial aircraft in service or presently offered. It pointed out that the DC-8 can produce two and one-half times as many passenger miles, two and one-half times as many ton-miles, three times as much gross profit and one and one-fourth times as many ton-miles per dollar invested as the latest piston-engine equipment. Douglas also demonstrated with charts that the direct operating cost of the jet is nowhere nearly as high as turboprop advocates assert, even on short-haul routes.

In a DC-8 "flight profile" for a New York-Paris flight, the following revealing figures were disclosed: Take-off field length, 8350 ft.; take-off weight, 252,000 lbs.; payload, 34,110 lbs.; reserve fuel, 16,360 lbs.; block time, 6 hrs. 25 min.; average cruise speed, 555 mph (or 30,500 to 40,600 ft.); landing weight, 170,500 lbs.; landing field length, 6330 ft. (The reasonable landing field length is due to the use of reverse thrust.)

It is generally assumed that the powerplant of most DC-8s will be the J75, an engine which is making considerable progress. It passed a 50-hour test in August, reportedly at 15,800 lbs. thrust. It seems that use of the J75, possibly in a de-rated version, is preferable to the J57 with water injection; the weight of the water, running into several thousand pounds, would be a heavy penalty.

Nonetheless, availability of the J75, particularly to foreign carriers, is a big question mark at this time. An alternate foreign powerplant to both the J57 and the J75 is the Rolls-Royce Conquest by-pass, although there is some doubt whether this engine will go into production.

Electra in Spotlight, Too

• Vying with the DC-8 as the center of attraction for delegates to the IATA New York meeting was the Electra. Elaborate displays provided tangible evidence that Lockheed will establish brand preference for the new model in the same way that it used advertising and promotional programs to build the Constellation and Super

the flurry of activity by other U.S. airlines in negotiating for delivery positions.

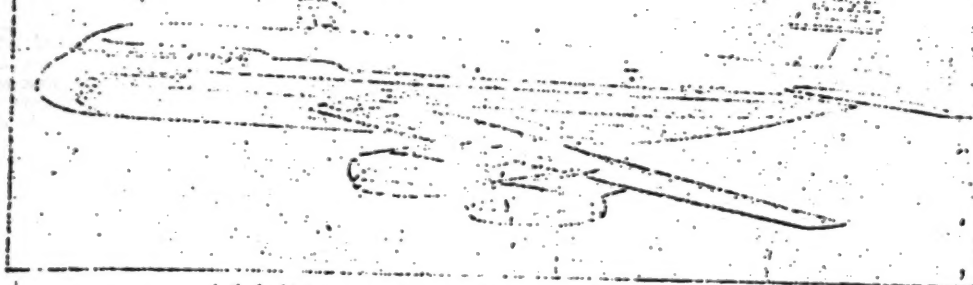
Major European airlines had assumed that the jet transport problem was not a particularly pressing one—something to be decided on in 1958, 1959 or maybe 1960. They were suddenly awakened to the fact that delivery of jets are of utmost importance and the prime positions are already gone or are going to be now beginning to realize that a one or two-year time lag in deliveries may be disastrous to

Douglas Holds Advantage

• Despite the earlier availability of the Boeing 707 it was clear that most airlines executives attending the IATA meeting in New York were more interested in the Douglas DC-8 than in the Boeing company's model. Lack of experience with Boeing products and highly satisfactory results with Douglas equipment seemed to be the main reason for this attitude. Boeing salesmen

(124)
J-57 engine by engine work. 10/11/55

DX 31, page 3
(American Aviation, Nov. 7, 1955, pp. 23-25, 27-28)



In the lead in jet race is Douglas DC-8, shown here with United Air Line markings.

Consolidation into the best-known transports in the world.

The turboprop plane needed little promoting in New York. Most of the airline men who saw it recognized that the Electra fulfills the need for an economical, wide-range transport. They liked its size (accommodating up to 91 passengers), its speed (over 400 mph cruise), its operational flexibility (permitting economical operations on short, medium and long routes) and its ability to use small airfields (it can take off or land in less than 5,000 ft.). Above all, they liked it because it looked right.

The technically-minded IATA delegates were impressed by the structural design of the Electra's airframe. This incorporates Lockheed's "fail-safe philosophy"—structural elements are arranged in such a manner that the failure of one element cannot result in the failure of the complete structural component. Larger structures such as forgings and integrally stiffened skins are used wherever practical in the Electra's design, avoiding the use of structural ribs and pieces with their multiplicity of joints and connections.

The "fail safe" fuselage shell is of ring-stiffened skin-stringer structure with the rings attached directly to the skin. An inner short metal grid, attached to the basic fuselage skin, gives effective cross increase and stress reduction wherever the skin is perforated by rivets or other fasteners. This stress reduction where holes occur minimizes fatigue cracks in the skin.

If a crack should occur, or the skin should be ruptured by a foreign object, the grid would serve as a series of crack stoppers which would prevent or reduce the crack propagation. Similar fatigue crack propagation in the wing is minimized by the use of low tension stresses in the lower surface and integral skin

reinforcing panels. Each surface is broken into spanwise panel strips about 20 inches wide so that if a crack originates in, and propagates across any one panel, the remaining panels have sufficient strength to support flight loads without failure.

While Lockheed had the maximum of information available on its Electra, Vickers was hesitant to disclose details of its Vanguard turboprop design. Inquiries about such basic matters as the new model's span, gross weight and price drew only approximate or evasive answers. Several air-

line executives at the IATA meeting commented that all they knew about the new Vickers design was what they had read in the press.

MOORE ON JET'S

For an up-to-the minute picture of airline jet financing read Selig Altschul's appraisal on page 27. Also in this issue see page 82 for Fred Hunter's views on Pan American's jet purchasing strategy.

Vickers' coyness on the subject of the Vanguard apparently stems from the fact that the aircraft was designed to a British European Airways' specification which may not suit too many other operators. Developments of the original design are afoot, it would seem, to make the Vanguard competitive with the Electra.

If indications prove correct the Vanguard versus Electra sales battle will be a heated one, for the results of it may well determine whether Britain is in the world-wide commercial transport business for jets or whether the Viscount was the exception that proves the rule. In all fairness, it should be said

that at the New York meeting nothing but praise was heard about the Viscount. There is no question but that Vickers has won the first round and that the second will be the decisive one.

Meanwhile, despite all the talk of jets and turboprops, orders are still coming in for piston-engine equipment. Douglas and Lockheed are confident of selling many more commercial turboprop-powered DC-7s and Super Constellations. To a small airline operating nothing bigger than DC-4s, and there are many such operators today, the prospect of a leaping into the turbine era is frightening both financially and operationally. (In the latter respect several of the larger airlines will have difficulty in making use of a jet fleet because of the inadequate runways at the airports which they serve. Thus there are few carriers today which are without a serious equipment dilemma at this time.)

Douglas Applies For DC-8 Certification

Formal application for certification of two models of its DC-8, a domestic and overwater version, has been filed with CAA by Douglas. Official paperwork was dated October 18 and submitted to CAA's west coast office by Douglas-Santa Monica chief engineer E. F. Suran.

Initial talks on DC-8 approval will get under way early this month when Harold Heckstra, Washington CAA engineering project officer visits Santa Monica. More detailed discussions with a team of CAA certification personnel are expected in December.

navies, maintained, the Navy needed the planes for test and training purposes. Therefore, they decided to terminate the Westinghouse contract at about 150 engines and the McDonnell F3H-1 program at 66 airplanes.

This decision, originally challenged by the investigators as a delayed one (it took effect in July, 1955), awaits the subcommittee's formal judgment.

In any event, Adm. Russell testified, the F3H-1 program was not a total loss. Admitting "mistakes" were made, he argued the Navy "gained two years" in securing the high performance, all purpose F3H-1N fighter. He estimated benefits of testing, training, and flight time with the J40 at \$50 million.

Total cost of the 60 F3H-1 aircraft delivered to the Navy, he said, was \$154 million, including frame, engine, spares and other equipment. The J40 program, he added, cost the Government \$107 million. This included termination costs to Westinghouse (though 6 of 11 contracts were no-cost terminations), and to Ford, which tool up, but never produced, J40 engines. Additional termination costs were filed by Temco Aircraft Corp. of Dallas, Tex. (\$4,930,000), and the Goodyear Aircraft Corp. (\$303,000).

Russell, and Navy Assistant Secretary (Material) Raymond H. Fogler, stressed to the subcommittee that the Navy had learned from this bitter experience. They described their new

FIRM plan ("Firm Introduction of Replacement Models") as designed "to avoid large premature purchases and at the same time to permit early introduction into the fleet of new and improved planes."

Nevertheless, subcommittee members had plenty to mull over:

• Can time and waste be further reduced when contract terminations are required?

• Is adequate liaison carried on between BuAer, its representatives in the field and research and materiel centers?

• Is proper care of Government property exercised by contractors?

• Can the U.S. have its pie and eat it, too—or, how great a "gamble" are we prepared to take in maintaining top levels of air power?

Financing Patterns to Change For Jet Transport Acquisitions

By SEBASTIAN ALTSCHUL

With the announcement of major jet transport acquisitions, the airlines involved are also facing up to some far-reaching financing programs. It is becoming clear that past conventional financial patterns utilized by the air transport industry to acquire new equipment are undergoing radical revisions as the projected jet programs are to be realized.

This becomes clear when it is realized that the United Air Lines order for 30 DC-8s, plus spare parts, entail a capital expenditure of some \$175 million. The company's net worth is less than \$100 million and its outstanding long-term debt was last reported at around \$37 million. Moreover, its net operating property, mostly aircraft, at June 30, 1955, was valued at about \$127.6 million.

In other words, United's jet commitments for the future are in excess of its present net worth and outstanding long-term debt combined, as well as exceeding its present equipment book value.

In fact, capital expenditures for the entire U.S. air transport industry are likely to be at least \$1.5 billion and perhaps as high as \$3 billion during the next ten years. By contrast, the group (including trunk, international, territorial and cargo), as of June 30, 1955, could boast of only \$1.3 billion in net worth. This was reported by but \$633.6 million in net worth and \$234.6 million in long-term debt.

During the industry's past development stage, it was conventional to finance aircraft purchases through equity and interim self-liquidating debt. This picked up the period where the DC-3

represented an initial outlay of \$100,000, moving on to the DC-4 with its \$450,000 tag, up to the first Lockheed Constellation in the \$750,000 class, the DC-6s around \$1 million, the DC-6Bs for about \$1.5 million and the Super-Constellations and DC-7s in the \$2-million group.

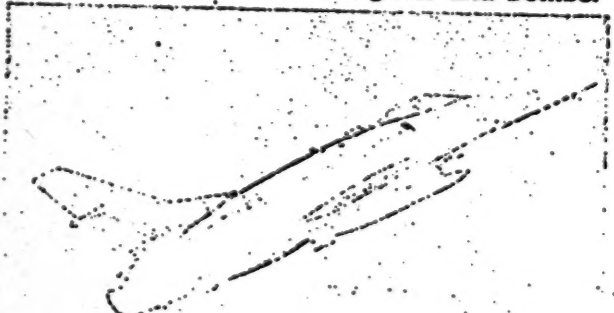
Limited earnings were largely re-invested and supplemented from time to time by equity financing plus short-term loans. Long term debts were issued exceptions, one being the \$40 million in 20-year debentures sold by American Airlines in 1946. As aircraft were, and continue to be, written off over periods ranging from a minimum of four years to a high of seven years, substantial cash has been generated.

Further, in recent years, tax amortization certificates helped swell the cash

flow. Such cash throw-offs were primarily applied to retire existing debt (created in past years to finance these purchases) and towards subsequent aircraft acquisitions. In this process, larger and larger capital formations were evolving in the air transport industry. For example, the domestic trunklines increased their total net assets from \$337.1 million at the 1946 year-end to more than \$834.5 million at the close of 1954. During this same period, net worth for the group increased from \$130.5 million to \$437.8 million.

This pattern of large cash-disbursements and the broader capital base of the industry would have been able to assimilate continuing aircraft acquisitions pretty much in the past conventional manner excepting for two significant

North American's F-100C—Fighter and Bomber



Fighter capabilities of Air Force's North American F-100C Super Sabre have been augmented in new role as a fighter-bomber. Photo shows conventional 155, 1,600 and 2,000-pound bombs along under the wings of the supersonic fighter.

development. First, the cost of the jet transports, the Boeing 707 and the DC-8, run from around \$5.5 million to almost \$6 million per copy, including spares and depending on the powerplants to be used.

This represents quite a jump in requirements from the capital formation stepped-up to the \$3-million unit cost of a Super G or DC-7. Secondly, it was not previously supposed that the initial jet transport orders would run to such individual large volumes. The sharp upward trend in traffic and the prospects of this condition continuing, however, are proving a strong motivation to have adequate equipment to meet anticipated demands four and five years hence. Despite the large number of aircraft orders in past years, the shortage of capacity available to a number of airlines at the present time is not without its effect on the entire industry in setting its future sights.

The high unit cost of the jet transports and their number will therefore introduce greater elements of long-term debt to make their financing possible. The measure of stability being established and the broader equity base already established in the industry, further makes the long-term financing route feasible. A \$5-million outlay for a single airplane may be regarded in the same light as a like expenditure for a brick and mortar industrial plant. In both cases, it may be anticipated that these expenditures will permit efficient and profitable operations to justify the outlay.

Moreover, the jet transport may be expected to have a useful life of at least ten years, perhaps longer. Financing plans accordingly will be geared to this expectation and be supported by depreciation charges and attendant cash-throws-off geared accordingly. More importantly, it is the earning power expected to be generated by the new equipment which gives substance to the equipment acquisition and its financing. These planes cost more than double any planes flying in commercial service today but they are also expected to produce a per-mile cost less than currently available from the latest piston-powered aircraft.

Thus far, none of the major airlines ordering jet transport equipment have indicated their definitive financing programs. Institutional investors, chiefly the insurance companies, will undoubtedly figure prominently in furnishing long-term funds. Banks will unquestionably remain in the picture with short-term credits. Equity financing in all of its facets, convertible securities and preferred and common may be expected to emerge to complete financing programs.

New Role for Chance Vought's Cutlass

Combat radius of Chance Vought's F7U-3 Cutlass will be extended by new fighter-to-fighter inflight refueling system shown here in artist's view. Minor modification will permit a Cutlass fighter-tanker to transfer several hundred gallons of fuel to another F7U and extend the range of the carrier-based fighter fleet without impairing its normal short-range strike capabilities.

Pan American World Airways has a \$259 million order for 707s and DC-8s. As of June 30, 1955, its total assets comprised \$253.9 million supported by a net worth of \$117.2 million and long term debt of \$46.2 million. The company has an extensive line of credit yet unused but this is believed intended to finance the balance of DC-7s previously ordered.

Of course, four years from now the continuing depreciation cash throws-offs will transform the existing debt picture so that renewed borrowings will be readily available. No doubt, the anticipation of this projection will figure prominently in the financing plans that may soon evolve for Pan American.

American's order for Electra's entailing a capital commitment of some \$65 million is unlikely to create any financing problem. However, should the company decide to move to jet transports, it is likely it may want to anticipate this requirement through long term financing.

Capital Airlines, despite a present net worth position of \$16.2 million is well on its way in acquiring 60 Viscounts costing some \$67.5 million without any compulsion to arrange any financing. Paying for these planes as they are delivered over a 60-month period, the company can refund its obligations to the British in the American market when it finds it convenient to do so.

Eastern, after ordering \$125 million in Super Gs and DC-7s, made a commitment for forty Lockheed Electras entailing an expenditure of \$100 million. This latter order, plus one to come for undetermined 20 jets of \$125 million, will entail some new financing, including long-term funds.

National has indicated an \$35-

million equipment expansion program including an order for six DC-8s and eight DC-7Bs. The company has stated that it will finance this entire program plus \$10 million in other facilities through earnings, sale of some of the existing planes, depreciation charges and bank loans of some \$25 million. This projected program is the most definite of any of the airlines acquiring jets and is further distinguished by the absence of any contemplated extensive long-term financing.

United Airlines has publicly indicated that it will pay for its new equipment through a financing program "now being arranged." The company prepared the way for such financing by calling its preferred recently (American Aviation, Sept. 12, 1955, P. 24). It is probable that long-term loans, short-term bank credits and another convertible preferred may enter into the financing here.

It is important to note that the bulk of the financial requirements for the airlines ordering jets will not come until four years or so from now. This gives them time to work out financing programs. By the same token, until they do, the aircraft builders will shoulder major responsibilities. Progress payments from their customers may ease the builder's strain, but his outlay and risk will be substantial until deliveries and collections are completed.

In anticipation of this requirement, Lockheed sold \$30 million in debentures earlier this year. Part of these proceeds was earmarked for the Electra program. It is reported that Douglas may soon enter the capital markets to bolster its resources to undertake its commitments, now aggregating some \$735 million in civilian orders. In viewing the jet transport orders and their consequences, the builders have more than their prestige involved.

MINUTES OF THE BOARD OF DIRECTORS MEETING
TRANS WORLD AIRLINES, INC.

June 21, 1961

The regular meeting of the Board of Directors of Trans World Airlines, Inc., was held on Wednesday, June 21, 1961 at 9:30 a.m., at the offices of the Corporation, 380 Madison Avenue, New York, New York.

Directors present were: Messrs. Ernest R. Breech
George R. Brown
E. O. Cocke
F. D. Hall
Clifford F. Hood
Barry T. Leithead
Albert V. Leslie
Sidney Maestre
Hughston M. McBain
Warren Lee Pierson
Ben-Fleming Sessel
Thomas A. Slack
Charles C. Tillinghast, Jr.

constituting a quorum.

Directors absent were: Messrs. Raymond M. Holliday
John A. McCone

Mr. Carl S. Rowe, of Counsel, was present by invitation.

Mr. Ernest R. Breech, Chairman, called the meeting to order and thereafter presided.

Mr. Ronald Duckworth, Secretary, acted as secretary of the meeting.

APPROVAL OF MINUTES

The minutes of the Board of Directors meeting of May 17, 1961 and of the Executive Committee meetings of May 18, 19, 24 (two), 25 and 31, 1961 were approved.

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(TWA Board Minutes-June 21, 1961) 76 HS

FINANCIAL REVIEW

Mr. Albert V. Leslie, Senior Vice President - Finance and Treasurer, presented the June financial review including an analysis and forecast of the market position of the Corporation for 1961.

Mr. Leslie also reported on the sale of Debentures in the amount of \$100,000,000 during June and advised that a total of \$19,037,900 had been subscribed for by shareholders generally and \$80,962,100 were purchased by the Hughes Tool Company at the closing on June 13, 1961.

Mr. Leslie advised that negotiations with respect to the 1961 financing were proceeding in accordance with the plan outlined to the May meeting of the Board; that the Prudential Insurance Company of America will not be included as a lender; that the total of \$147 million to be borrowed will be provided by the lending banks to a total of \$40 million and \$53.5 million each will be made available by The Equitable Life Assurance Society and the Metropolitan Life Insurance Company and that the closing of the financing was planned for the third week of July.

He advised that the contract progress payment of approximately \$13 million due to Boeing Airplane Company on the additional jet aircraft had been postponed from July first to August 1, 1961, subject to the payment to Boeing of five per cent interest on such amount.

OPERATIONS REVIEW

Mr. E. O. Cocke, Senior Vice President and System General Manager, reported on system operations and described the steps being taken to improve passenger sales including introduction of Royal Ambassador Service in the International Division and increased advertising in both divisions. There was a lengthy discussion of the extreme competition on North Atlantic routes. He reported that since the inauguration of Convair 880 aircraft schedules in the New York/Chicago market, the TWA share of the market had increased from eleven per cent to twenty per cent. Mr. Cocke also advised that an intensive sales campaign was under way in all major TWA markets.

RELATIONS WITH HUGHES TOOL COMPANY

Mr. Tillinghast stated that following the meeting of the Executive Committee on May 31, 1961, at which it had been decided that no adequate reasons had been shown to justify a change in the Corporation's Boeing purchase program, a meeting was held with representatives of Hughes Tool Company to permit Hughes Tool Company to present to the Corporation technical information asserted to be available to Hughes Tool Company

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DX 40, page 3

eting 6/21/61

(TWA Board Minutes-June 21, 1961)

relating to the question of whether or not the Corporation should acquire four additional Convair 880 jet aircraft and thirteen Convair 990 jet aircraft rather than the Boeing aircraft presently on order by the Corporation. He stated that such a meeting was held on June 2, 1961, and that Mr. Chester Davis, counsel for Hughes Tool Company, made a presentation on this subject to the Flight Equipment Committee and others, as the directors had previously been advised that no one with a technical background had assisted Mr. Davis at the meeting, that little of technical significance was developed at the meeting, and that the transcript of such meeting was available to any director. He further stated that subsequently, Mr. Rummel, who was present at the meeting, analysed the various points raised by Mr. Davis and submitted a report on the subject. This report was considered by members of the Flight Equipment Committee on June 8 and 9, 1961, and by the Management Policy Committee on June 13, 1961. The members of both Committees concurred in Mr. Rummel's conclusion that nothing of importance had been presented by Hughes Tool Company that had not previously been considered by the Flight Equipment Committee and that the previous recommendation that the Corporation should acquire Boeing rather than additional Convair 880 and Convair 990 aircraft should be confirmed.

Mr. Tillinghast then referred to the letter dated June 10, 1961 from Mr. Raymond Holliday to the Corporation and others, to which was attached a letter dated June 9, 1961 from Mr. Holliday to the Corporation. He stated that a copy of both of these letters had previously been forwarded to each director. He further stated that he had received that morning a telegram from Mr. Chester Davis advising that the ten-day period within which the three proposals contained in the letter of June 10, 1961 could be accepted by TWA was extended to June 22, 1961.

Mr. Tillinghast also referred to a letter dated June 16, 1961, which he had sent to Mr. Raymond Holliday commenting on the three proposals contained in the letter of June 10, 1961, and requesting certain additional supplemental information relating to such proposals. He stated that a copy of this letter had also been sent to each director.

Mr. Tillinghast pointed out that in connection with proposal number one of the letter of June 10, 1961, relating to a proposed increase in the equity capital of the Corporation, an extremely important fact was the effect that the acceptance of such proposal, including the condition that the present Voting Trust be terminated, would have on the ability of the Corporation to obtain additional needed financing, particularly additional debt financing. He said that he had asked Mr. Albert V. Leslie, Senior Vice President - Finance and Treasurer, whether or not the Corporation could arrange additional needed debt financing if the Voting Trust were terminated as proposed in the letter of June 10, 1961, and that Mr. Leslie had reported that in his opinion this would not be possible under the circumstances. Mr. Tillinghast also stated that letters had been addressed to the financial institutions presently holding the Corporation's outstanding notes asking whether they would be willing to terminate the Voting Trust on the conditions outlined in the letter of June 10, 1961, and whether, if the Voting Trust were

XT201307

terminated these financial institutions would be interested in participating in the current financing program involving additional debt of \$147 million. but one of these financial institutions had responded formally or informally that they would not be willing to agree to the termination of the Voting Trust and would not be interested in participating in additional financing if the Voting Trust were terminated. He said that the Corporation had also requested the advice of its financial advisors Dillon, Read & Co., Lazard Freres & Co., and Lehman Brothers, as to whether or not, if the Voting Trust were terminated it would be possible to obtain other financial institutions to provide necessary debt financing and that he had received a letter from Dillon, Read, that was also concurred in by Lazard Freres and Lehman Brothers, to the effect that this would not be possible.

The meeting then proceeded to discuss the other two proposals contained in the letter of June 10, 1961.

The meeting was advised that Mr. Chester Davis, counsel for the Hughes Tool Company, would like to address the meeting. After discussion the directors concluded that in view of Mr. Davis' numerous and lengthy prior communications to the Board and the management, no purpose would be served by granting Mr. Davis' request. However, Mr. Rowe was requested to talk to Mr. Davis to determine whether he had any specific additional information or proposals that he wished to submit to the Board. Mr. Rowe then left the meeting. Upon his return he reported that Mr. Davis stated that he had nothing in writing to submit but would be glad to answer questions that any of the directors had and that he would like to discuss the proposals contained in the June 10, 1961 letter with the directors. Mr. Rowe stated that upon being requested to advise him of anything Mr. Davis wished to transmit to the Board, Mr. Davis declined to do so, but indicated that he would put what he had to say in writing and submit it in that form.

After discussion, upon motions duly made, seconded and unanimously carried, it was the stated sense of the meeting:

1. That the Corporation could not at this time accept Proposal Number One in the letter of June 10, 1961 from Hughes Tool Company, but that Hughes Tool Company should be advised that any reasonable program which would increase the Corporation's equity and make adequate provision for necessary additional financing for the Corporation, including the refunding of its existing debt and the financing needed for the aircraft now on order by it, would receive full and sympathetic consideration by the Board;

2. That the Corporation should not accept Proposal Number Two in the letter of June 10, 1961 from Hughes Tool Company, involving the offer by Hughes Tool Company to purchase an additional \$11,235,900 principal amount of Subordinated Debentures with warrants attached on the condition that TWA commit itself to acquire thirteen Model 990 Convair jet aircraft previously ordered by Hughes Tool Company from General Dynamics Corporation; and
3. That with respect to Proposal Number Three of the letter of June 10, 1961, involving the offer that Hughes Tool Company assign to the Corporation its rights to acquire from General Dynamics Corporation thirteen Model 990 Convair jet aircraft and four Model 880 Convair jet aircraft, no facts had to date been presented to the Corporation that should change the prior decision of the Board to follow the recommendations of the Flight Equipment Committee on this matter, or that would indicate that the acquisition by the Corporation of four additional Convair 880 and thirteen Convair 990 aircraft rather than the additional Boeing aircraft ordered by the Corporation, would be in the best interests of the Corporation.

ACQUISITION OF BOEING FLIGHT SIMULATOR AND
ADDITIONAL FUNDS FOR CONSTRUCTION AND EQUIPING
CF FOOD UNIT AT KANSAS CITY

(3)

After discussion, upon motion duly made, seconded and carried, the following appropriations were approved:

Acquisition of Boeing Flight Simulator required to support training program related to acquirement of twenty-six additional Boeing Model 707 aircraft, and to provide annual recurrent training for Boeing flight crews	\$1,386,100
Construction and equipping of food unit at Kansas City (\$473,655 previously approved for this project)	\$68,328

Upon motion duly made, seconded and carried, it was

RESOLVED, that the President or the Senior Vice President - Finance and Treasurer, or the Senior Vice President and System General Manager, or anyone authorized by any one of them in writing, be, and each hereby is, authorized in the name and

After considerable effort we--I say "we"; Convair, really, with my working with them--wound up with the Model 18. Contracts were developed, specifications were written. A lot of this work was done by me pretty much alone in the technical phases, although I did bring in some TWA experts on a secret and quiet basis because of wanting to hold this close because of a competitive thing, did bring in people from time to time. The further along the project went, the more people I brought in, along with the concurrence of Mr. Hughes.

I had lots of contacts with Mr. Hughes during this period.

The Model 18, for a number of reasons, was not--we didn't move forward with it. However, while we were developing it we also were working on the jet stream, we were working with AVRO Canada on the development of a very high-speed airplane, we were keeping negotiations alive at Boeing and when the Model 18 ceased to be a reasonable--reasonably practical possibility, Convair undertook the development of the Model 19, in a very preliminary way, to evaluate it, and that was followed with the Model 20, which got to the General Dynamic's board level, as I understand it, and was so advised at the time, and that's where it stopped, and some time later Convair came forward with the Model 880, and approached

Rummel

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Q Now can we proceed with Vickers?

A Certainly, surely.

Q Please do.

A Well, Vickers became of interest with the development of a smallish four-engine turboprop airplane that called the Viscount. I had followed the Viscount development out of interest. It was originally developed through a joint effort involving BEA, Vickers and Rolls-Royce, and included as part of the development program the installation of two Rolls-Royce turboprop engines and at least one, and maybe two, Dakotas. Dakota was English designation of the C-47 type. These were flown in passenger service, and all this was of technical interest. When the Viscount itself emerged I flew the experimental model, which, as I recall it, was called the model 630. I am not absolutely sure, but I think that was it.

The Viscount was reviewed by myself and my staff. Vickers were anxious to penetrate the world market, particularly the American market. This was a very important thing as far as they and I think most manufacturers were concerned, so they made lots of data available for review.

We were frankly skeptical about the operation

Rummel

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cost characteristics of the airplane, and I recommended on two different occasions to Mr. Hughes that we not move forward with the Viscount program.

The Viscount was also discussed within TWA, and, as I recall it, this view had the support of the knowledgeable people within TWA. That is, the view that we not proceed.

In the meantime, the Viscount became a well established airplane in Europe, and a very popular airplane. Capitol Airlines purchased a sizable quantity. I am not certain of the sequence. I think they ordered 45, and then that order, I believe, was increased to 60, if I recall correctly, and then it was increased to 75 units.

Christopher Clarkson, who is the U. S. representative for Vickers, did telephone me while I was at home in Kansas City, and advised that Capitol was forced to cancel, and was in the act of cancelling, these last 15 airplanes, and in view of our earlier discussions on the Viscount, and TWA's general equipment situation which he viewed to be that which represented generally a lack of equipment, would we be interested, and would I take this up with Mr. Hughes.

I said "Well, given the opportunity, I will be

Rummel

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2
1 A We both were, I think. I had the impression that
2 he was. I was.

3
4 Mr. Hughes also requested that I see whether or not
5 or let's say determine whether or not, if I could, TCA
6 would be willing to give up a delivery position on the Vis-
7 counts that were then being produced for TCA at Weybridge,
8 Weybridge being the Vickers factory in England. My under-
9 standing was that the delivery position, if TCA could
10 it available, would be for Mr. Hughes and not for TWA. I
11 was glad to do this. I called Gordon McGregor a number of
12 times, and in the end he agreed, after talking to Sir George
13 Edwards, and getting his concurrence, to make one of TCA's
14 positions available to Mr. Hughes.

15 This was all being done at a time that we were
16 seriously considering the Viscount for TCA's use. By "we"
17 I mean Hughes and myself, and then the people that we had
18 doing these things.

19 The negotiation became extended.

20 Q Became what?

21 A Extended. That is, it covered a fairly extensive
22 period of time. This was during the time that Carter
23 Burgess was president of TWA. I don't recall if this
24 started just before Mr. Burgess became president, or just
25 afterward, but he was there during, I think, the larger part

1 of those negotiations.

2 It was clear that the Viscount could be improved
3 with respect to payload range, for example, and that it
4 should be, and part of the negotiation consisted in trying
5 to sell Vickers on items of this type, although the Capitol
6 airplanes had been committed for some time, and the whole
7 configuration of the airplane in detail was circumscribed
8 and limited by the construction progress that had been made
9 and was continuing to be made on these particular 15 air-
10 planes. But nonetheless, Vickers did agree to do some of
11 these things and make these improvements. These were
12 reported to Mr. Hughes from time to time.

13 The contract development--I might say Mr. Hughes
14 asked that I coordinate and handle, be responsible for the
15 development of the Vickers deal. I reported this to TWA.
16 I arranged for our attorney to go to England to deal with
17 Vickers house and Vickers, and upon request from Carter
18 Burgess, arranged for Mr. Leslie to go over and work on the
19 financial side of the deal, which he did.

20 Q Who was the attorney who went to England?

21 A Beg your pardon?

22 Q Who was the attorney that was sent to England to
23 work on this?

24 A Mr. Harry L. West.

Rummel

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Q Of the Chadbourne firm?

A Yes, sir. During this time I had discussions by telephone with Sir George Edwards, and met with a number of his representatives over here, both on contract and technical matters. The nature of the deal was complicated, because it involved considerable use of foreign money rather than U. S. sources.

However, Mr. Hughes wanted to know one day what I thought about the deal, should we proceed or shouldn't we proceed, and I remember telling him that I didn't feel that with the recent change in TWA management that I would be--that I was confident in expressing the view of TWA, Mr. Burgess was relatively new, and that if he wanted an opinion from TWA that I could produce this more ably if I discussed it with him. He said "Well, by all means, do that."

Q "With him" meaning with Burgess?

A With Burgess. Well, "with him," with TWA management, certainly including Burgess.

Q Yes.

A The meeting was held in New York, with Burgess and others, and George Spater called me relating the results of the meeting. I wasn't able to be at the meeting, although I had Mr. Rourke there.

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As I recall it, there were a number of stipulations which TWA management felt should be met prior to any commitment, but that if these were met then a commitment would be in order. This was passed on by me to Mr. Hughes.

Q Can you describe generally what those conditions were that the TWA management felt should be obtained prior to a commitment?

A Well, one that I remember is an increase in payroll range that I mentioned earlier, one was financing of all except 20 per cent--

Q Of the total purchase price? 20 per cent of what?

A It was a package deal, Mr. Davis. It included more than the airplanes. It included airplanes, spares, and some other things, if we wanted them. We hadn't fully completed that part of it. Spare engines were included, for example. I don't want to mislead you. It wasn't a package deal all from Vickers, but several deals, all of which were wrapped up in a final package, we will say, simultaneously. At least, we were working toward that.

THE SPECIAL MASTER: The question is about the 20 per cent, what is the 20 per cent.

A The 20 per cent, I am a little vague on that. I think it's 20 per cent of the airplane and spares, to the extent that we committed for spares, to go with the airplane

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from Vickers. I am not clear at the moment as to whether or not the 20 per cent applied to the engines, or if that was a hundred per cent, or what it was. I simply don't recall now. I am not clear as to the extent of spares we actually had in it at that time. I seem to recall the spares were, to some extent, an elective, that we either could or could not have them included.

Q I interrupted you when you were about to say that you reported to Mr. Hughes the conditions which the TWA management felt should be obtained prior to a commitment. Will you pick up from there?

A I mentioned two of them.

I am not certain on the others. I seem to recall there was one relating to price from TWA management, but I don't remember if this is really so or not. And there could have been possibly one more.

The result of reporting this to Hughes was that--

Q Before you give us the result of the reporting, can you tell me what happened when you reported?

A Well, that was what I was going--

Q I am sorry. I thought you were going to give me an end result as a result of reporting without telling me what happened when you reported to Mr. Hughes.

A I don't remember exactly what happened, except I

1 reported by phone, and the net result of that was that we
2 set out to deal on the Viscounts, but in a way to comply
3 with the stipulations from management.
4

5 Q Did Mr. Hughes encourage the management to try to
6 get the Viscounts? That is what I am trying to get at.

7 A He had appointed me the coordinator on this project,
8 that is, the development of the specifications and the con-
9 tract, and would, you might say, from time to time, that all
10 this be expedited. I mentioned it had taken a little
11 longer than I thought, and it sure did. So his directive
12 or result of the conversation was that I should continue
13 to work with Vickers, and bring them around to complying
14 with these various items, although at the same time Mr.
15 Hughes did or said he did, and I am sure he must have
16 to Sir George Edwards himself, and I don't know whether this
17 was as a result of Sir George calling him or Mr. Hughes
18 calling Sir George. I don't recall now.

19 I think another condition, if I can revert to that,
20 was that the specifications be satisfactory to TWA.

21 Q To which?

22 A To TWA.

23 MR. WILLIAMS: That the specifications be satis-
24 factory to TWA.

25 A This had been our intent, Hughes' and I. This had

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been the understanding and intent in that respect.

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they did go.

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As I recall it now, and I have to give you this as my best recollection, Vickers met the 20 per cent criteria, they met the specifications criteria substantially--no one ever bats a hundred per cent, but we felt the specs were agreeable--and they did meet, as I mentioned earlier, the payload range aspects.

It was very, very late in this negotiation that it was discovered that the man in Vickers with whom we were dealing thought that he had an agreement on the airplane price when he in fact did not.

As a result of this, we undertook a price negotiation which became tedious and somewhat prolonged. It included discussions with a number of Vickers people who came over for the purpose, and included such things as escalation or let's say the establishment of the

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2 reasonableness of asking price compared to what they had
3 obtained or contracted for with other airlines, but consider-
4 ing things like labor inflation, parts cost rise and the
5 like during the intervening period. It really became
6 involved.

7 We were unable to come to agreement on price be-
8 cause we were unable--by "we" I mean I and the people that
9 were helping me--I was unable to get Vickers to agree or
10 to meet the objectives in price that I understood that Mr.
11 Hughes desired.

12 This finally got to the point where Vickers said
13 "Look, you make us an offer. We don't care what it is.
14 Make any offer. We might take it."

15 I reported this to Carter Burgess. Carter did not
16 answer, but referred me to Mr. Leslie.

17 Mr. Leslie advised that I had no authority to make
18 any offer of any sort, that in fact no offer could be made.
19 This was the first I had heard of this.

20 MR. BARR: Could I have that last?

21 THE WITNESS: This was the first I had heard of
22 this turn of events.

23 A I was in New York in the next few days and discussed
24 it personally with both Mr. Burgess and Mr. Leslie, and
they had the view that there wasn't, as I understood it,

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10 1 that there wasn't any deal that could be made that TWA
2 could enter into. However, unfortunately, by the time all
3 this occurred, Mr. Hughes had already committed to Sir
4 George Edwards to take at least 15 airplanes.

5
6 Vickers representatives were also in New York at
7 the time, and told me that, look, they could understand
8 that there might be problems. I might interject this, to
9 say that TWA, in this particular period, had suffered a
10 downturn in business, and this effected our ability to
11 proceed. It wasn't a whimsical thing at all, I am sure.
12 And that, referring to the Vickers representatives comment
13 now, if there was anything that we desired, a different
14 interest rate, maybe different terms, a different percent
15 of financing, just to say so. They weren't sure they could
16 do it, but they would be happy to try.

17 I reported this to Mr. Burgess and Mr. Leslie, and
18 it was clear that we would be unable to proceed.

19 This was reported to Mr. Hughes, who seemed rather
20 upset to be so advised, although I had indicated earlier that
21 it appeared TWA was cooling off some. I discerned nothing
22 as definitive as I have described, but a sort of lack of
23 enthusiasm let's say.

24 Mr. Hughes, I recall, said that he had committed to
25 Sir George, that he would not change that commitment, that

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2 it was worth more to him and his reputation in Europe to
3 stick with his word than to back out, and that was that.

4 To complete the story, it must have been a year
5 later, I don't know when it was exactly, but Mr. Hughes call
6 ed me, and the only thing he said was that he just talked
7 to Sir George Edwards, Sir George was satisfied that he
8 had discharged all his responsibilities, and he wanted me to
9 know that he had fulfilled all his obligations, and that
10 things were now on even keel again with respect to our rela-
11 tions with Vickers.

12 Q And in fact TWA did not take any Viscounts?

13 A No, TWA did not take Viscounts. Indeed, Vickers
14 didn't build them for us, because by the time it was deter-
15 mined that we couldn't get together on price and on financing
16 and other matters, Vickers simply stopped work and attempted
17 to find other customers for the airplane.

18 One interesting aspect--it might be an interesting
19 aspect--perhaps I should report here is that at no time,
20 to my knowledge, did Vickers really understand, at least,
21 the first number of months, whether this would be a Hughes
22 Tool deal or a Howard Hughes deal or a TWA deal. I am
23 sure they understood the airplanes would be used for TWA,
24 and I was led to believe that the deal would ultimately
25 in fact be a TWA deal, and not a Hughes deal, though it was

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12 2 Hughes and I that were negotiating it for TWA.

3 Q Would this be a convenient place--go ahead.

4 A Well, sure. Why not.

5 Q I don't want to break into your train of thought.

6 A This is a good place to stop.

7 THE SPECIAL MASTER: We will take a short recess.

8 (Whereupon, a short recess was taken.)

11 (Continued on page 399.)

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BY MR. DAVIS:

Q Before continuing where we interrupted, Mr. Rummel, you might clarify for me one possibly two points.

At one time you referred to an effort which was made for obtaining a Viscount out of the delivery schedule for TCA, a Viscount for Mr. Hughes or the Hughes Tool Company?

A Yes, sir.

Q Was that for just one Viscount?

A As I recall it, it was one airplane.

Q Do you know what--

A I do not--I would not say at this time, because I don't recall, whether there might have been a request for more than one. We wound up with one, and as nearly as I can recall, that was a request that I made.

Q You did receive one then?

A No.

Q You made a request for one?

A As I testified, I worked with Mr. McGregor, so to speak, I discussed the situation with him--

Q Who is McGregor?

A He is the president of TCA.

(Continuing)--at Mr. Hughes' request. The request that I can recall is for one airplane, but I am not total

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confident that I might not have backed off from a request for two or three and backed off to one. That is quite possible.

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Q I understand. My question now is whether or not in fact one was received.

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A To my best knowledge, none were received by anyone.

8

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Q Do you recall what the purpose was or the reason for making a request for one or which came down to one?

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A I am quite certain, I can't be positive, but I am quite certain that Mr. Hughes expressed the view that he wanted the one airplane for some sort of flight test purposes. It was definitely an airplane for Mr. Hughes and not for TWA, as far as I ever knew.

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Q I am not sure that I am entirely clear as to the time period involved, as to when these discussions with Vickers or this flight that you had on an experimental model took place.

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Can you identify approximately when it was that this--

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A If you are referring to what I recall as being the old 630, that was at the time of the first Anglo-American technical conference at Brighton, which would put a fix on the time. I can only guess the time now, but--

Q Subject to correction, can you give me an idea

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2 A 1952 or 1953.

3 Q It started as early as that?

4 A On the 630. The discussions on the procurement
5 that I described in such a lengthy manner was considerably
6 after that.

7 Q I see. That is the other thing I am trying to
8 establish, because it seemed to me that there were two
9 different periods involved that you were describing,
10 and I am trying to separate them now before you continue.

11 Let me see if I understand you correctly, that
12 approximately in 1952 or 1953 you developed this interest
13 in Viscount and took a flight on an experimental model
14 630, is that correct?

15 A Put it in this perspective. We were following
16 Viscount developments, as we tried to do many developments,
17 to see whether or not we should have interest. I
18 mentioned previously that we had analyzed and looked at
19 the Viscount twice. This covers quite a period of time,
20 and on two occasions I recommended to Mr. Hughes that we
21 not move forward with a procurement program.

22 Q That is the other area I was trying to straighten
23 out.

24 A We did not move forward with a procurement pro-
25 gram. I think I mentioned in the testimony previously

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just a few minutes ago that when I expressed this view to Hughes I did it with the confidence that I was also reflecting knowledgeable people in TWA.

Q I remember you testifying to that effect. I am trying to get you to give me an approximate time when that event occurred.

A I would be hard put to pin that down.

Q Was it still during the Maron regime?

A Yes, I think so.

Q What was Mr. Hughes' reaction to that report?
I gather--

A It wasn't quite that formal. This was in the nature of a series of phone conversations, as I recall it, and the net result was that neither TWA nor Hughes procured the airplane.

Q You mean that airplane of the model 630 type?

A No, no. The 630 was not the production type airplane at all. The 630 was the prototype, and the production airplane was a larger and fairly substantially different model.

Q Now I am trying to get you to identify the model as to which you advised Mr. Hughes you would not recommend and which you felt reflected the views of TWA and as a result of which you did not move forward with

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2 procurement negotiations, as distinguished from the type
3 of aircraft as to which you did have these lengthy
4 negotiations. That is what is confused in my mind from
5 your prior testimony.

6 A Well, I don't recall the model number, Mr. Davis,
7 of these airplanes. It was the kind that Vickers had
8 slated for production for the delivery period that we
9 were considering at the time.

10 Q Can you identify it, then, by the period, by the
11 time period?

12 A Well, let me say I have the impression now that
13 had TWA moved forward with Hughes in the first instance
14 we would have far and away been the first to have Viscount
15 in the States. We were, if not the first, among the three
16 U. S. airlines to express interest in the Viscount.

17 Q I gather from your testimony that there was a
18 model or type of Viscount being offered by Vickers which
19 you felt was not suitable or desirable from TWA's point of
20 view, and that at some later period, and that is what I
21 am trying to identify, one period against the other,
22 you did become interested in a Viscount, if certain
23 specification requirements were met, and--

24 A Maybe this will help, Mr. Davis. I may have
confused the issue by talking about the 630 at all.

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1 The 630 was a prototype, the first Viscount produced.
2 It was the only such airplane produced. The airplane
3 was re-engineered, the fusilage was lengthened, the fuel
4 capacity changed somewhat, as I recall, and other changes
5 made. Then it was placed in that subsequent configura-
6 tion in production. That became the first production
7 Viscount, the first group of which went to TBA.
8

9 From that time on Viscount remained in production
10 as essentially the same basic airplane. There were
11 changes, however, introduced at various times along the
12 production line. The engine was uprated in power,
13 other changes were made. I can't recall at the moment
14 whether there was a still longer fusilage version or not.
15 There might have been. Continental might have gotten
16 a longer fusilage, for example.
17

18 So there was no splitting of the line or two
19 distinctly dissimilar models. It was an evolution of
20 the first type that was then produced in series, so to
21 speak, in this one production line. I hate to take the
22 time to elaborate on all these points, but in the interest
23 of accuracy, when I say one production line, I am speak-
24 ing figuratively, because the airplane was produced on
25 more than one production line in England.

THE SPECIAL MASTER: Mr. Davis, I am not

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1 clear about this airplane that they did recommend having
2 a contract about, whether it was because it was an im-
3 proved airplane or because it might be more attractive
4 since Capitol was not able to take it.
5

6 Will you try to clarify that?

7 MR. DAVIS: I will, but my recollection of the
8 testimony is that--and I am trying at the moment
9 to do it by a time basis--my recollection of the
10 testimony is that there came a time when TWA thought
11 they might be interested in a Viscount if certain
12 changes, features, were met, and that they had
13 discussions along those lines, and Vickers agreed
14 to do it, and that triggered off the negotiations.
15

16 Q What I wish you would do, Mr. Rummel, is to
17 describe as well as you can what apparently were two
18 periods, if not two types of aircraft; namely, the
19 initial offering or approach that was made by Vickers,
20 which resulted in your decision not to recommend the
21 aircraft, and the event or events which occurred which
22 developed into a new interest by TWA, and which resulted
23 in the negotiations that you have described.
24

25 Do you follow what I am trying to get at, and
what the Special Master is interested in developing?

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2 A The trigger for a renewed look at the Viscount
3 was the advice from Christopher Clarkson, which I then
4 handed on to Mr. Hughes, that the 15 airplanes would be
5 available.

6 Q That 15 airplanes would be available?

7 A Yes, as a result of the Capitol cancellation
8 that Clarkson at this time seemed perfectly assured of.

9 Q Can you give me the approximate date when that
10 event occurred? The date is always subject to correction.
11 If you can associate it with an event--

12 A I can't be really specific. . . As I said
13 before--

14 Q About the time Mr. Burgess came in?

15 A About the time he came in, or shortly before.
16 I am not certain exactly which. It could have been
17 shortly after he came in. It was a fairly unexpected
18 development, I think, although many of us were surprised
19 when Capitol ordered that many airplanes in the first
20 place.

21 Q Then, if I understood you correctly, as a result
22 of your reporting that to Mr. Hughes Mr. Hughes showed
23 interest, and suggested or requested that you--

24 A I am not certain what additional testimony
25 you are seeking at this point.

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1 Q I am merely trying to develop all of the facts
2 relative to what happened in connection with these
3 efforts to negotiate and obtain or procure this Vickers
4 product.

5 A Well, I indicated earlier that the result of the
6 conversation with Hughes was a request that I explore
7 the matter further with Vickers.

8 Q That was a response you received from Mr. Hughes
9 when Mr. Clarkson of Vickers indicated that there were 15
10 Viscounts available as a result of the Capitol cancel-
11 lation? Do I have it correctly now?

12 A Just as I testified previously, Mr. Davis.

13 THE SPECIAL MASTER: Mr. Rummel, to clarify
14 what I was getting at, it seemed to me you made it
15 clear that you would not recommend this airplane,
16 and then later you came along with a recommendation.

17 I didn't get clear in my mind why you would, at
18 a later date, recommend an airplane that you strongly
19 recommended against. There must have been some
20 factors there that you haven't made clear to
21 me, anyway.

22 THE WITNESS: Well, there was quite an inter-
23 val of time between the earlier recommendation and
24 and the final recommendation. A number of things
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2 had occurred. One was that the airplane became
3 a better airplane, and the recommendation from TWA
4 to move forward was conditioned upon the airplane
5 being still better; that is, having more payload and
6 more range.

7 The other situation which I think was slightly
8 different was that the recommendation given to Mr.
9 Hughes in the last case reflected results of a
10 management meeting in New York, at which time
11 certain conditions were arrived at, and while I
12 discussed it slightly with Mr. Spater, I accepted
13 that as the directive, and simply handed it on to
14 Mr. Hughes, passed it on by phone to Mr. Hughes.

15 Q Then you also referred, if I recall, to a team
16 visiting various airlines which had those Viscount in
17 operation for the purpose of getting more statistical
18 data and the report that TCA was cooperative. I am try-
19 ing to place that timewise in relationship--

20 A That was part of the investigation of the Viscount
21 that followed--

22 Q Clarkson's--

23 A (Continuing)--Clarkson's call and my conversa-
24 tion with Hughes. In fact, I discussed this approach
25 with Mr. Hughes, as I recall it.

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2 I must say that the general results of that in-
3 vestigation, as I recall it, led us to be somewhat more
4 encouraged than we thought we would be when we undertook
5 the investigation.

6 Particularly, as I recall it, TCA was quite con-
7 tent, and showed good--reasonably good operating cost
8 factors.

9 MR. DAVES: Does that clarify the record
10 sufficiently?

11 THE SPECIAL MASTER: Yes.

12 Q I think, Mr. Rummel, that perhaps it would be
13 appropriate for you now to complete your description
14 of relations with Vickers when we took the recess.

15 A Vickers undertook the development of a fairly
16 large four-engine jet in a preliminary way, and advised
17 TWA of this, and I recall discussing this to some extent
18 with Sir George Edwards and Derek Lambert at Weybridge
19 during a visit there.

20 This particular project was subsequently dropped
21 by Vickers.

22 Q Do you recall the time, approximately?

23 A No, I don't. I would have to reconstruct it now.
24 I don't recall it.

25 After that Vickers undertook development of an

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2 airplane model called the VC-10, and kept us reasonably
3 well advised of what it was and what they intended to do.
4 They finally developed--I guess that's the wrong tense--
5 they finally decided to develop two models, the VC-10
6 and what was called the Super VC-10, both of which were
7 ordered by BOAC.

8 Q Is that a jet?

9 A This is a large intercontinental four-engine jet.
10 And even though commitments had been made for Boeings
11 and Convairs, Vickers would, when it was convenient for
12 them to do so, drop in and advise us of the progress and
13 the general status of their program, but not with any
14 serious efforts that could be discerned to sell us on
15 the airplane.

16 Q Approximately when did that take place?

17 A Oh, the best I can recall, Mr. Davis, frankly,
18 I don't remember, Vickers finally decided to go ahead
19 full steam, but it was probably on the order of 1958, or
20 thereabouts. None of the VC-10s are in service yet.

21 (Continued on page 411)
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Q And you or TWA did not make any particular study or evaluation--

A Oh, yes, we certainly did. We calculated or estimated the operating cost, route characteristics, gave it a look see to the point where we were satisfied as to how it would compare with the Boeings and derivative models of the Boeings

Q What was the result of these studies, what conclusion did you or TWA arrive at?

A The final action was to buy additional Boeings.

Q What decision are you referring to referring to acquiring additional Boeings?

A The one made during 1951.

Q Did you have any conversations or communications with Mr. Hughes or the Hughes Tool Company or any of its representatives with respect to this Vickers VC-10 versus additional Boeings?

A Well, I don't recall discussing the VC-10 in this way, no.

Q Do you recall any discussion of any kind with either Mr. Hughes or the Hughes Tool Company or any of its representatives with respect to the decision to be made by TWA?

MR. WILLIAMS: You mean going back to 1958?

MR. DAVIS: I am referring to the offer or offering by Vickers of VC-10s and the evaluation made by TWA and

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the decision, as I understand it, to acquire additional Boeings rather than acquiring Vickers VC-10s.

A I don't think I have been clear, Mr. Davis. I would like to try to clarify one point.

Q Please do.

A It was not really a contest between the Vickers and the Boeing. It was already clear to us that these airplanes, in our view, were of a different order, the better airplane by far, considering all factors, was the Boeing. It was not a contest between the two.

What I was trying to indicate was that the final result in terms of procurement action was that we didn't buy the VC-10, we finally bought Boeings.

Q And now I am trying to determine whether or not that final action or in connection with that final action there was any communication of any kind with either Mr. Hughes or the Hughes Tool Company or any of its representatives.

MR. WILLIAMS: Is this in 1961?

MR. DAVIS: No, relating to the action not to acquire VC-10s and acquire additional Boeings.

A Well, I had no discussion with Mr. Hughes in 1961 at all.

Q Prior thereto. My question still is as broad as I intended it to be, Mr. Rummel.

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1 A The difficulty I have is tying it into the procurement
2 ment of the Boeings.

3
4 Earlier in a phone conversation I am sure that I
5 apprised Mr. Hughes to some extent of what the VC-10 was,
6 and that it was being developed, but I do not recall any
7 prolonged discussions with him on it. It was certainly not
8 discussed in relation to the procurement of the 331Bs.

9 Q Now I am interested in what took place or what
10 reaction you got from Mr. Hughes or anyone else representing
11 the Hughes Tool Company.

12 A Well, I don't recall Mr. Hughes' reaction. I might
13 say the 331B didn't even exist then, as I recall it. I
14 don't recall any specific reaction to this.

15 Q Does this complete the Vickers story, if I may
16 refer to it that way?

17 A That's all the salient points I can recall. I am
18 sure that much more went on. I may have oversimplified some
19 items, or I may have unintentionally omitted some others,
20 but that is all that comes to mind at the moment.

21 MR. DAVIS: Mr. Special Master, we are at 4:25,
22 and rather than open up the next subject, I would like
23 to bring up the schedule for next week.

24 I know that I want to continue with Mr. Rummel
25 next week.

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2 were of lesser interest than some of the others.

3 Q Do you recall during what period of time it was
4 that Handley Page was in the market of making offerings
5 to United States airlines?

6 A I don't really know the extent to which they dealt
7 with other airlines. I would only assume that since
8 they were talking to us they were talking to other air-
9 lines.

10 Q I am trying to identify the period as well as you
11 can do it, and always subject to correction, Mr. Rummel.

12 A Well, I can't be sure, but I think it falls in the
13 period, oh, possibly 1956 or '57 on. I am not certain of
14 that date, Mr. Davis.

15 Q During the jet age period?

16 A Essentially during the jet age, maybe with minor
17 overtures just before that.

18 Q The next one that you identified was Bristol of
19 England. Will you give us the same information with
20 respect to that manufacturer of aircraft that you have
21 with respect to the others?

22 A The first work with Bristol, as I recall it,
23 predated the Anglo-American conference at Brighton that I
24 mentioned a few days ago. I can't recall the exact
25 time now, but Bristol put forward information which was

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2 descriptive of the Britannia in an interest to--in an
3 effort to interest us in it.

4 I visited the Bristol factory I believe twice
5 on trips to England, and inspected the Britannias that
6 were in production, and I think was kept generally apprised
7 of the progress that Bristol was making in developing
8 and selling the airplane.

9 The airplane was ordered by BOAC and a number of
10 other airlines, and I believe was also ordered, and I don't
11 recall if this was initially or later on, by British
12 military services as a transport.

13 The airplane was a large four-engine turboprop
14 that I believe I described heretofore.

15 Q Having identified it as a large turboprop, perhaps
16 at this point it might be helpful if you would identify
17 the other type of aircraft that might be considered as
18 competitive with the Britannia, or with which the Britannia
19 was competing for whatever market.

20 A When the Britannia was first discussed, Bristol
21 anticipated delivering it much sooner than they finally
22 did, and at that time, had it been produced when Bristol
23 expected, it would have been competitive to contemporary
24 U. S. piston airplanes, and later on with the Electra,
25 and still later on with the jets.

Rummel

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10 1 It in fact wasn't produced when Bristol first
2 thought it would be, so the competition that it found
3 itself up against varied through the years.
4

5 Q The only other U. S. manufacturer of a turboprop
6 was the Lockheed Electra, is that correct?

7 A Of a large turboprop, yes.

8 Q The one that would be competitive with the
9 Britannia, the Viscount, or--

10 A The Britannia had much more range than the Electra.
11 The Electra could have competed on some segments, but
12 not on the extremely long-range segments.

13 Q You say that the original plans of Bristol, if
14 they had been able to deliver as soon as they originally
15 anticipated, the aircraft would have competed with the
16 U. S. piston engine. Which U. S. piston engine aircraft
17 would it have been competing with?

18 A The late Constellation series and the DC-7 series.
19 It in fact did compete in international service with these
20 airplanes. Again, the DC-7s and Connies were still in
21 service when the Britannia finally appeared.

22 Q When I refer to the competition between types of
23 aircraft I am--perhaps I should learn to use a different
24 expression, Mr. Rummel--I am trying to determine the other
25 types of aircraft which were available to airlines for

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2 procurement for the purpose of determining to what extent
3 airlines had a choice between procuring Britannias or
4 Electras or Viscounts or Vanguarders or whatever other types
5 of aircraft, jets or piston engines, so far as that goes,
6 for the purpose of determining what competition Bristol
7 was facing as a manufacturer and would-be seller of air-
8 craft, what kind of competition it was facing from other
9 manufacturers of aircraft.

10 Have I made myself clear to you?

11 A In addition to those I have mentioned, I believe
12 the Comet would have been construed by Bristol as being a
13 competitor.

14 Q For clarity, would you mind now identifying,
15 listing for me, so I can understand, the various types of
16 aircraft which were in competition with the Bristol Britan-
17 nia in the sense that I have just tried to explain to you?

18 A Well, this would be my personal opinion, but as I
19 understood, you are asking what Bristol considered their
20 competition to be at that time.

21 Q That's right, but from your point of view, as a
22 person interested in choosing or deciding which type of
23 aircraft to procure for the benefit or use of TWA, I am
24 interested in your opinion and judgment as to which air-
craft were competitively available to you. I do not mind

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2 your giving me also, if you care to do so, your understand-
3 ing as to what Bristol might have considered its competition,
4 but I would appreciate it if you could do it separately.

5 A I will try, Mr. Davis. As I recall it, my
6 distinct evaluation of Bristol at the time was that they
7 could not reasonably be expected to produce the Britannia
8 when they said they--when they were planning to produce it,
9 so I tended personally to place the airplane in a bracket
10 of time somewhat later than Bristol did.

11 Even so, in the beginning the Britannia would
12 compete or did compete on the market with the later series
13 of Constellations, the DC-7 and the Comet.

14 Later on the Britannia, once it was in production
15 and fully certificated, and in service, it competed with
16 jets from the standpoint of procurement, at least, Bristol
17 made an effort in this direction.

18 As I recall it, Bristol claimed there was always
19 a place for the Britannia, and that there was a place for
20 jets as well, but obviously, to the extent that Britannias
21 would be procured, it would, to some extent, displace the
22 jet market.

23 It also competed, in this period, in this country,
24 certainly, with the Lockheed Electra, but not in overseas
25 service, because the Electra was not that kind of an air-
plane.

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Q Perhaps I can approach what I am driving at a little differently, Mr. Rummel.

I understand your testimony to be that Bristol approached TWA or approached you some time before this conference at Brighton. You don't know the exact date.

Can you give me any idea of the year which you think that was?

A Well, it might have been around 1952, but I am not certain.

Q Around 1952. All right.

Apparently you gave some thought, made some studies, evaluated the possible use of the Bristol product, the Britannia, the possible use of that product by TWA, is that right?

A Yes, sir.

Q At the time that you were giving that consideration to this product what other aircraft from other manufacturers were also available to you or were being offered to the domestic airline industry which warranted consideration as an alternative to the Britannia? Can you describe or identify that situation for me?

A Well, I may have misunderstood, Mr. Davis. I thought that's what I did.

Q I think you did too, but in your answer I was getting

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2 a little confused when you began to describe the fact that
3 the aircraft was competing on the routes with another air-
4 craft. It may be that the answer is still the same.

5 Let me put it this way: At that time, assuming
6 it was approximately around 1952, was that the period of
7 time when there was also being offered to TWA a choice of
8 late model Constellations, Douglas DC-7s, Lockheed Electras,
9 the Comet, Viscounts, was all this in the same period?

10 A I think I see what you mean. No. 1952 is the
11 best date I can recall. It's around that period that I
12 first visited the Bristol factory in England.

13 Q And you gave consideration to Bristol for what period
14 of time following 1952, four or five years, two years, six
15 months?

16 A I hadn't finished the thought I was trying to ex-
17 press.

18 Q I am sorry.

19 A I was going to add that at that time the Britannia
20 was in the early stages of production. One may have flown
21 or it may not have. I am not certain now. But it certain-
22 ly was not available in the sense that airplanes could im-
23 mediately be delivered.

24 Q That I understand, but a decision had to be made as
25 to whether or not you were going to commit yourself for the

Rummel

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product, is that right?

A Well, I wouldn't say so, no. I think the explorations at Bristol and with Bristol were aimed toward resolving whether or not we should be interested in procuring an airplane, and if we should be interested, then when we could, and how to go about it, that sort of thing.

I think we looked on the Britannia as an extremely interesting airplane, one that should be watched closely, particularly with respect to what the competitor internationally might do with it, we were interested in the extent of interest on the part of other U.S. airlines in the possible procurement of it, but I think after examining the airplane we were quite content not to move in the direction of the Britannia, at least until we were more certain of the true economic usefulness of the machine.

In other words, we, as I recall it, were content to see what happened and when it happened before we would have ranked it, for example, in the same competitive light, in terms of real interest, as we would have the late Constellation or the DC-7 series.

Nonetheless, the Britannia was given consideration, not only by TWA, but there were numbers of conversations with Mr. Hughes during which the airplane was described, performance aspects were discussed, power plant

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2 configuration was discussed, and that sort of thing.

3 Q With Mr. Hughes?

4 A Yes, between Mr. Hughes and myself, but I recall
5 this, that there were a series of conversations. I couldn't
6 begin to pinpoint the date, or precisely what was said in
7 each one of them, but I do recall discussing the Britannia.

8 Q Can you give me an idea of the period of time during
9 which it would be fair to say that TWA or you were giving
10 active consideration to the possibility of procuring
11 Britannias?

12 A Yes. Very active consideration was given to pro-
13 curing Britannias during Mr. Burgess' regime as president.

14 Q So it began in 1952, during Mr. Damon's regime,
15 1952 or thereabouts, and continued until very active interest
16 was shown by TWA during Mr. Burgess' regime, through 1958?

17 A I wouldn't say, Mr. Davis, throughout that period
18 we would call it very active interest. There were periods
19 when we did very little more than keep abreast of what was
20 going on, be apprised by Bristol of what was going on.

21 The period of real active interest, where serious
22 consideration was given to procurement of the airplane,
23 was during the Carter Burgess regime.

24 Q At that time what other type of aircraft were you
25 considering in lieu of the Britannia? What I am trying to

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get at is--

MR. WILLIAMS: You mean during the Burgess regime?

MR. DAVIS: During the period when he was giving serious consideration to the Britannia, and I understand the Burgess regime was one of those times.

MR. WILLIAMS: He said procurement as contrasted with just looking at it, I gather.

My problem with your question, Mr. Davis, is that they were looking at it from 1952, and I understand the witness to say that serious consideration to procuring it was during the Burgess regime, and I want to make sure that the competitive factors that you are calling for are during that period.

Q Was it only during the Burgess regime that you gave serious consideration to the possibility of procuring the Britannia, or had you given consideration as to the possibility of procuring the Britannia prior to the Burgess regime?

A I would put it this way, Mr. Davis: During the Burgess regime procurement of the Britannia was a red hot issue. We had considered the Britannia prior to that time, but more with respect to determining, to the extent we could, whether or not we should be interested in it.

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My own personal view of the airplane, as I recall it now, was that we should wait and see.

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During the Burgess regime, to answer your question as I understood it; the airplane wasn't directly competing at the time with anything, except to the extent that it was competing for available dollars, because by then the jet-streams had been procured--I am reconstructing this now from memory--we had done considerable work, I think in fact had ordered Convairs, and had ordered 131 and 331 Boeings-- well, I will modify this to this extent: It probably did compete with the Electras and Lockheed efforts on the Electras, except we did not understand that the Electra was a coast to coast non-stop airplane, though as I recall it at the time Lockheed seemed to think it was, so we didn't put it in the same category as the Britannia, which clearly could fly coast to coast non-stop with no great difficulty.

The idea that seemed to be the main idea here behind interest in the Britannia stemmed from conversations with Mr. Hughes. It went along this line, that if we could procure a reasonable number of Britannias, which we at that time thought was probably quite a comfortable airplane to ride in, both with respect to noise and lack of vibration, and if we would put it in coast to coast one-stop or non-stop service, and if we could do it quickly, we would have

Rummel

a very real advantage over the competition who at that time would still be flying piston aircraft.

Not only would it be more comfortable, the Britannia should have been considerably faster. We felt that if we could get a limited number of these airplanes, confine them, say, to New York-Los Angeles, New York-San Francisco, possibly a stop in Chicago, that we would, so to speak, have a leg up on American and United.

Now, we thought that we might be able to do this on a practical basis with a relatively few number of airplanes if we could make the right deal with Bristol and others so as to minimize the investment in fueling, repairs and other support activities.

Various types of planes were considered, including using Constellation in international service, but what I am saying is that it sort of finally boiled down, as I recall it, to the most serious interest finally being in a limited number of airplanes in this domestic service.

Bristol was quite anxious to make a deal, to the point where it was quite willing to re-arrange delivery schedules to the extent that it could in order to accommodate Mr. Hughes and TWA.

During this period I think that I was negotiating with Bristol on behalf of Mr. Hughes, but not having it

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2 clearly understood whether the airplanes would finally be
3 ordered by Hughes or by TWA, although I believe the intent
4 in this instance was to have them finally ordered by TWA.

5 The general Bristol situation at the time was
6 somewhat confused, because for a number of reasons a
7 number of airlines that had ordered the airplane were,
8 as I recall it, seeking to change their orders for the
9 airplane with Bristol.

10 One airline I think wanted to delay delivery.
11 As I recall it now, I think that was Northeast.

12 Q Who?

13 A I believe Northeast.

14 Q Wanted to delay delivery of Britannias?

15 A Delay the delivery for a while. I don't recall
16 the particulars, Mr. Davis, and I probably can't state it
17 as a fact, but that is my recollection of the situation.
18 Just why, I don't know at the moment.

19 Some of the smaller airlines not in this coun-
20 try had also approached Bristol in this respect, as I re-
21 call it, but as the negotiation continued Bristol ap-
22 proached numbers of them and others toward making airplanes
23 available to--for TWA's use, believing, and I think they
24 were certainly quite correct in this belief, that if they
25 sold TWA they would have a strong wedge in the American

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1 market, and if the airplane was anywhere nearly as good as
2 they claimed, they would be able to sell others simply be-
3 cause we had it for competitive production.

4 I don't recall the range or number of airplanes
5 that we discussed, but it varied from five to some sub-
6 stantially higher numbers, the higher numbers depending
7 upon what could be made available by Bristol.

8 This negotiation was carried to the point of
9 preliminary review of specifications, Bristol--the tender
10 by Bristol of letters offering the airplane.

11 I made a trip to Montreal at Mr. Hughes' request
12 to inspect a Britannia which was at Montreal at the time.
13 It was my understanding that Mr. Hughes was in Montreal,
14 and while I talked to him while I was there, I did not
15 see him.

16 I did meet with men from Bristol. They indi-
17 cated the airplane was available for Mr. Hughes to fly,
18 and had been available for a number of days or weeks for
19 that purpose.

20 I looked the airplane over and discussed a num-
21 ber of design features with the Bristol people, Bristol
22 having opened the airplane up for that purpose.

23 By opening up, I mean opening inspection,
24 the cowling and the like, things they could do without

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Rummel

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1 dismantling the airplane.

2 This airplane was also examined during flight
3 tests for air purity. In fact, we did it on the Britannia
4 before we, as I recall it, did this relative to the Vis-
5 count that I mentioned earlier that TCA had made
6 available.

7 Air samples were taken from various places
8 in the cabin and in the cockpit. I discussed the test
9 with Mr. Hughes in some detail before it was undertaken.
10 He was quite particular on how he wanted some parts of the
11 test run. The test, in the first place, was done at his
12 suggestion, but I concurred that it was a good thing to do.
13 I was frankly concerned with this part of it.

14 The test results, once they were made available
15 by the laboratory that assisted, were reviewed in some de-
16 tail with Mr. Hughes.

17 Now, a corollary--corollary effort to these
18 tests was to check into some of technical aspects of re-
19 lated items.

20 For example, at what temperature does the or
21 would the fumes from various kinds of oil become toxic,
22 if at all.

23 Now, this included petroleum based lubricants
24 as well as synthetics. I recall being somewhat dismayed

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2 so that not a great deal of information appeared to
3 be available, particularly with respect to synthetics,
4 that is, synthetic lubricants.

5 This part of it was done by my power plant
6 specialist operating out of Kansas City, who then made
7 this information available to me for review and for pur-
8 poses of discussing this along with the flight test re-
9 sults with Mr. Hughes.

10 The net results of these particular tests was
11 that we found no evidence of toxicity in the airplane,
12 or any danger from toxicity.

13 THE SPECIAL INQUIRY: I think this is a good
14 place for a recess.

15 (Whereupon, a short recess was taken)
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MR. DAVIS: Will you read to the witness the last portion of his answer to refresh his recollection as to where he was in his narrative?

(The answer was read.)

MR. WILLIAMS: Had you finished the answer, or do you want to add to it?

A I would like to add this, that, by way of explanation, the reason the tests were undertaken in the Britannia was because in this particular airplane the air that was pumped into the cabin and the cockpit for breathing during pressurized operations all flowed through the power plants themselves, where heretofore, generally, airplanes had the air that was breathed pumped in by separate pumps or superchargers, disassociated, except for the power drive, from the engines.

The question was whether or not the air passing through the engine could somehow become toxic, and this was the reason why it was felt appropriate to conduct the tests.

The Viscount was a different installation from the Britannia, but nonetheless we thought it appropriate in that case too.

Q Have you now fairly described the nature or scope of the investigation that was made by TWA relating to the desirability of procuring Britannias?

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1 A No, I can elaborate somewhat.

2 While I was at Montreal Mr. Hughes requested that
3 I contact Carter Burgess and invite Mr. Burgess and a num-
4 ber of his immediate staff to Montreal to fly in the
5 Britannia.
6

7 My understanding of this exercise was that this
8 would give Mr. Burgess and his staff an opportunity to
9 evaluate the riding qualities of the airplane and perhaps
10 with that perspective better visualize the kind of service
11 that we were discussing.

12 I contacted Mr. Burgess, and he and a number of
13 top people showed up at the Montreal airport, where they
14 were met by myself and a Bristol representative, taken to
15 the Britannia, and then flown in it. It was a fairly short
16 flight, as I recall it. I think it was possibly an hour
17 and a half, or thereabouts.

18 On landing we returned to the airport, flew back
19 to New York, had dinner there fairly late in the evening,
20 and went our respective ways.

21 During this same period consideration was being
22 given to procurement of 1049Hs, which is a Constellation
23 type that had a fairly flexible interior. It was also dur-
24 ing this period that Viscounts were being considered. I
25 remember a meeting called by Mr. Burgess in his New York

Runnel

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1 office which was aimed at coming to a uniform position, so
2 to speak, within TWA as to what TWA wanted presumably so
3 that this information could be handed on to Mr. Hughes.

4 The results of the meeting were summarized and cop-
5 ies of the summary, as I recall it, given to myself, Mr.
6 Burgess, possibly Mr. Leslie, so that we would have a uni-
7 form position, and if I recall correctly, considering the
8 various equipment alternatives that were available for con-
9 sideration, it was recommended that we not move forward
10 with the Britannia.

11 Q Can you tell me, while you are on that subject,
12 who attended that meeting for the purpose of arriving at
13 this uniform position within TWA?

14 A Well, the only people I recall are Mr. Burgess, Mr.
15 Leslie and myself, although it is possible others were
16 there.

17 Q Was there a difference of opinion within TWA as to
18 which type of aircraft was best suited to TWA's needs?

19 A I think there were differences of view as to the
20 relative desirability of various courses or combination
21 of courses that we could undertake. I do not remember any
22 sharp cleavage or arguments.

23 Q Do I understand you correctly that as a result of
24 this meeting the decision of this group was not to go ahead
25

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2 with the Britannia, is that correct?

3 A No, the decision was that we should recommend to
4 Mr. Hughes, as I recall it, that we not move forward with
5 the Britannia.

6 Q Was that done, was that recommendation transmitted
7 to Mr. Hughes, do you know?

8 A I am sure it must have been, Mr. Davis. I don't
9 recall specifics here, as to just how or who did it.

10 Q Was it after that meeting that negotiations with
11 Bristol were terminated, or can you explain to me what
12 then happened?

13 A I don't remember an act of terminating negotiations.
14 The impression I have now of what happened then is simply
15 that our interest waned, time went by, and it just ceased
16 gradually to become an active negotiation.

17 Certainly Bristol continued for a while to make
18 efforts to sell the airplanes.

19 Q Do you recall what views, if any, Mr. Hughes had
20 with respect to the Britannia, as to its desirability from
21 TWA's point of view?

22 A Well, the impression I had at the time, Mr. Davis,
23 was that Mr. Hughes was very seriously interested in ex-
24 ploring all possibilities to determine feasibility of
moving forward with the Britannia procurement program.

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1 I would certainly view this as a serious, earnest
2 effort. As to what was really in his mind in summary fashion
3 at any one point, I don't think I could say. I had the im-
4 pression that he was quite interested in going that way.
5 He certainly knew how to ask a good many perceiving and de-
6 tailed questions on the airplane, the general situation.
7

8 Q Can you tell me approximately when it was that this
9 decision was made by this TWA personnel you had identified
10 not to move forward with the Britannia?

11 A As I recall it, the decision not to recommend the
12 Britannia was fairly late in 1957, but I really can't be sure
13 of the exact time.

14 Q Did any domestic airline in the United States in
15 fact receive Britannias?

16 A I don't believe any were delivered to any domestic
17 airlines, but I think at least one and possibly more had at
18 one time ordered Britannias. I think Northeast was one of
19 those. This would bear some checking. It is possible that
20 there is one other one, but I can't be that definite now.

21 Q Do you know what happened to those orders?

22 A Cubana did, but I do not consider them a U. S. air-
23 line.

24 Beg your pardon?

25 Q Do you know what happened to these orders that were

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1 placed by other airlines?

2 A Not except to the extent that I indicated earlier.

3 Q You say that these Britannias became a red hot issue
4 during Mr. Burgess' regime, but that prior thereto they also
5 had been considered.
6

7 Can you identify a prior period when they had been
8 seriously considered and abandoned?

9 MR. WILLIAMS: Seriously considered?

10 MR. DAVIS: Yes.

11 A Well, by "red hot issue" I meant it was an earnest
12 and serious negotiation that called for final decision one
13 way or the other. I don't recall any of the earlier reviews
14 or investigations having gotten to that point.

15 (Continued on page 465.)
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3 Q In other words, is it fair to say, then, that from
4 approximately 1952 the possibility of acquiring the Britan-
5 nias was being explored more or less continuously with
6 varying degrees of interest in their product until it
7 reached a point that you have described in greater detail
8 during the Burgess regime--

9
10 A No, I don't think it was explored more or less
11 continuously. I think we had the fact that the Britannias
12 would probably exist and then later did exist in mind
13 through this period, and at times, when something new
14 came up, new documents were received, new information be-
15 came available, then we would give that some additional
16 consideration.

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duction of jets, it seemed to me that we were probably going to extend our organization beyond the reasonable point that it should be extended, and that we might not do all jobs as good as they should be done, whereas if we undertook a less ambitious program than trying to do all things, we would be far better off.

In a moment it may come to me, but I don't recall specifically where I put the Viscounts in relation to the Entomias and the IIs and other things that were being kicked around at the time.

Additionally, I remember at one point, when we were considering the forecasted maintenance and overhaul costs, I recommended, as a result of inspecting the airplane at Montreal, that for planning purposes we should double those costs. I recall not being favorably impressed with many mechanical aspects of the airplane from the standpoint of cost of maintenance.

Q Without trying to recall what your personal recommendations were, can you describe or identify what the reasons were for the conclusion which was reached at that meeting?

A Well, my difficulty is in specifically recalling all of the conclusions reached at the meeting, which I seem to be unable to do, Mr. Davis. Some of them were,

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3 by nature, contingent on other conclusions.

4 As I recall it, the nature of it, and I don't recall
5 the specific, was, well, if Viscounts are in fact procured,
6 then Eritannias should not be. It was more this kind
7 of thing rather than simply that under no circumstances,
8 as I recall it, should the Britannias be procured. But I
9 don't recall exactly what came out of it in detail. The
10 gist of it was that we felt it was better to forego the
11 Eritannias, as I recall it, as a broad assessment of one
12 of the broad results of the meeting. I just don't recall
13 the specifics.

14 Q And then proceed more actively with respect to the
15 Viscount, or was it a decision to abandon all of them?

16 A Well, as I recall it now, the Viscount program
17 was still active, and it was expected that would continue
18 to be active.

19 Q Is Bristol still making offerings of a type of
20 aircraft to the domestic airline industry?

21 A Yes, they are. They are building a twin-engine
22 air bridge type airplane. I don't know of any airlines
23 over here, though, that have procured it. It is in use
24 in Channel services, and I believe a few other areas.

25 Q Have you completed your description of both the
relations of TWA to Bristol and the scope or nature of

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1 U. S. airlines?

2 A Well, I can't say I have stated every particular,
3 but I have tried to give you the evolution, if you like,
4 of our relations with Bristol.
5

6 Just for example, I recall that Bristol did report
7 having had discussions with certain members of government,
8 I think there was some committee in Congress there was
9 involved, with respect to particular problems that would
10 be imposed on Bristol by its other commitments. Bristol
11 had suggested that a joint meeting be held with the govern-
12 ment to help sell this plan, but we chose not to take that
13 step at the time it was suggested.
14

15 In fact, we didn't take the step at all.

16 When we came to this, in connection with the TWA
17 airplane strictly from TWA's point of view, we looked at
18 it in terms of its--in terms of what it would probably
19 do for others, and then what that would do to us.

20 As I mentioned earlier, part of the objective of
21 the negotiation with Bristol was to find a way to proceed
22 without requiring much cash.

23 As I recall it, although I do not recall the
24 particularity, part of the reason Bristol had for con-
25 tacting the government was to make funds available for
the program, and that Bristol felt to better do this it

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3 would like to have some tangible evidence of interest,
4 either a personal appearance, a letter, or something, and
5 to my best recollection, it got no such tangible evidence.

6 Q You referred to production problems at Bristol.
7 Those were production problems in relationship to avail-
8 able financing?

9 A Well, at one time part of the airplanes that
10 Bristol were talking about making available to Hughes and
11 TWA were airplanes on order by Scottish Clan. While
12 I can't be certain at this time, I think Bristol felt the
13 need for mending fences, if you like, ahead of time, with
14 respect to releasing airplanes for this purpose.

15 I am sure they had discussions with Scottish Clan,
16 and the exact degree to which this may have gotten into
17 discussions at a government level, I can't be certain
18 now, but I have the impression that it probably did.

19 Q Can you identify the Scottish Clan to which you were
20 referring?

21 A Not except that it was an interest that had
22 ordered a fairly small number of Britannias.

23 Q Were the financial resources of TWA at that time
24 a factor in the decision or conclusion which was reached?

25 A Well, this would have been primarily a question

that I could not have answered to from a management point

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(Excerpts from Deposition of Robert W. Rummel)"

Rummel

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point of view. This would be a question Mr. Leslie would have, I suppose, been expected to take a position on with Mr. Burgess.

I have never known a case yet, when ordering equipment, when finances weren't an important consideration.

(Continued on page 470)

Rummel

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Q What I am trying to determine is whether or not, to your knowledge, the financial resources available to TWA at that time were a major factor or consideration which was discussed at this meeting attended by Mr. Burgess, Mr. Leslie, yourself, and others.

A Well, I can't answer it, Mr. Davis, because I don't know what was made available or what would be made available either through TWA or through Hughes to TWA or what. This is an area that I didn't directly work with.

Q What I am trying to establish is whether or not this decision which was made at this meeting which you have previously identified, whether it is your understanding that the decision was predicated upon factors other than the availability of financing to TWA from whatever source.

A Well, I am quite certain that there were factors considered besides financing.

Q I understand that. I am trying to determine to what extent available financing or the willingness of the Tool Company to provide the financing or to commit its credit was a subject of discussion at this meeting or meetings at which the decision that you have described was made.

A I don't recall specifically.

Q I am interested in the possibility of a merger involving Bristol

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2 Mr. Rummel.

3 You testified at one time that Bristol original-
4 ly anticipated a delivery schedule which you felt they
5 might not be able to keep.

6 Can you describe what the facts were in that
7 regard, what was it that Bristol originally anticipated
8 being able to do, and what in fact developed?

9 A I don't recall the schedules now, Mr. Davis. I
10 recall, in going through the Bristol factory, having this
11 in mind, and it was a sort of a personal evaluation, if you
12 like, that as a result of what I saw, and as a result of
13 the discussions I then had with them, they could not
14 reasonably be expected to meet the delivery schedule that
15 they were talking about and planning on. And by "delivery
16 schedule," I am speaking now of the production of airplanes
17 to their customers.

18 Q That is what I am talking about.

19 A Later on the delivery prospects were, again upset
20 because the Britannia caught, so to speak, some backwash
21 from the Comet program. As a result of the investigations
22 that followed the Comet disasters, the British Government,
23 acting, to a fair degree, I believe, in concert with
24 industry, laid down some criteria which required extensive
25 re-evaluation and retesting of not only the Comet, but

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3 also the Britannia. Now, this in turn caused additional
4 delay in producing Britannias.

5 Q Can you identify or describe the nature of that
6 delay; was it a delay of months, a year?

7 A Well, I can certainly give you my recollection. I
8 would be hard put to prove it at the moment. But I would
9 say--I have the impression that the Britannia was delayed
10 an additional year or possibly a year and a quarter, or
11 thereabouts, as a result of the additional testing and
12 re-evaluation, re-engineering and modifications that came
13 out of the investigation of the Comet and the reinvestiga-
14 tion of the Britannia.

15 Q By reason of some mishap which had occurred?

16 A Because of the Comet disasters. I am not aware of
17 any mishaps on the Britannia that called for this.

18 Q Now do you think you have adequately described the
19 nature of the offerings made by Bristol and the relations
20 of TWA to Bristol?

21 A Well, as I said, I am quite sure Bristol approached
22 TWA after that sequence, but I seem to draw a blank right
23 now as to what it was.

24 Q Have you fully and adequately described the partici-
25 pation of Mr. Hughes or the Hughes Tool Company or any
representative of the Hughes Tool Company in that relation

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3 ship?

4 A Well, to the extent that I presently recall it,
5 we did not lose sight of the Britannia, it became a
6 competitive factor in the Atlantic.

7 Q I am referring to the part played, if any, or the
8 extent to which a part was played, either by Mr. Hughes or
9 the Hughes Tool Company or any representative of the Hughes
10 Tool Company.

11 A Well, that is all I recall at the moment, Mr.
12 Davis. I am quite sure that we discussed the technical
13 features of the airplane from time to time in the perspective
14 of jet developments, what could be learned from it to be
15 reapplied, and that sort of thing, but I don't remember any
16 specifics.

17 Q The next manufacturer that I have listed is Short-
18 Harlan.

19 A Yes. It has proposed primarily, as I recall it,
20 cargo aircraft in various sizes from time to time.

21 Short-Harlan used to be Short Brothers, I believe.
22 It is currently promoting, if you like, the use of a fairly
23 sizeable freighter that it has under development.

24 This was not a particularly active relationship,
25 and still isn't, although we did receive information from

from time to time and would talk to them as they passed

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AFTERNOON SESSION

2:00 P.M.

ROBERT WILAND RUMMEL, resumed
the stand and testified further as follows:

EXAMINATION (Cont'd) BY MR. DAVIS:

Q During the luncheon recess, Mr. Rummel, has anything
else occurred to you that you haven't already identified or
described?

MR. WILLIAMS: In connection with Short-Harlan?

MR. DAVIS: In connection with the manufacturers
who from time to time may have made offerings to the
airline industry. Is there anything you would like to
add or change to your testimony to date?

A No, nothing occurred to me during luncheon, Mr. Davis.

Q Was there anything which has occurred to you since
you began testifying here which you would like to modify or
change?

A No.

Q The next manufacturer which I have on my list is Sud
Aviation, or Aviation Sud--whichever you prefer.

A I visited the Sud people in Paris and the Sud fac-
tory at Toulouse sometime before the first Caravelle flew.

Q When was that?

A Probably in 1952 or 1953. I am not positive. I was
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1
2 taken on a tour through the facility, and had somewhat
3 tedious but interesting but technical discussions with
4 their engineers--tedious because of the language problem.

5 Generally I became familiar with what they were
6 doing, and the status of the project, and also the Sud
7 facility, as well as their plans for producing the Caravelle.

8 Sud from time to time would send specifications and
9 other descriptive data pertaining to the Caravelle project
10 to my Kansas City office. I might say this was a particu-
11 larly intriguing airplane design because of the engine lo-
12 cation.

13 Part of the purpose of the visit was to try to es-
14 tablish as best I could whether or not Sud appeared to have
15 the capability of developing and producing an airplane in
16 this category, and in direct competition with others with
17 whom we had been dealing.

18 The Caravelle was ordered by Air France who receiv-
19 ed the initial production lot, but additionally was sold to
20 Air Algiers and a number of other European airlines.

21 Sometime later a Caravelle was flown across the
22 Atlantic and flown on demonstration tour pretty much through-
23 out the United States, and if memory serves correctly,
24 touched a certain number of countries of South America.

25 This tour was a highly organized tour on the part
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3 of Sud, involving demonstrating the airplane to most of
4 the major airlines, but additionally in promoting the gen-
5 eral cause of good U. S.-French relations. I recall being
6 told at the time that the cost of the project was being
7 shared by Sud and the French Government, although Sud is
8 in fact primarily owned, I believe, by the French Govern-
9 ment.

10 In making arrangements for the demonstration in
11 Kansas City, Sud had been in touch with my office. I ar-
12 ranged for the handling of the demonstration with our opera-
13 tions department, and also arranged for our publicity people
14 to work with the local Chamber of Commerce and with Sud to-
15 wards setting up various meetings with town people that Sud
16 wanted to meet with. This was a number of months in ad-
17 vance of the actual demonstration, as I recall it. I had
18 the impression that this had been done elsewhere by Sud.

19 The airplane arrived at Kansas City, and was demon-
20 strated to two or three plane loads of TWA personnel in
21 combination with town officials and other prominent citi-
22 zens that Sud had invited and who had accepted. I went on
23 one of the flights and was tremendously favorably impressed
24 with the comfort of the airplane from the passenger's point
25 of view.

Sud advised that only two non-Sud pilots had been

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1 cleared by Sud management to fly in the airplane. One was
2 Charlie Lindbergh, and one was Mr. Hughes. They advised
3 they wanted to demonstrate if at all possible the airplane
4 to Mr. Hughes.
5

6 I got in touch with Mr. Hughes. I don't recall
7 whether I left word at the Hughes' office or whether it was
8 in the course of another call, but I recall advising him of
9 this, and indicating my belief that the airplane had strong
10 passenger appeal, although I recall indicating I wasn't
11 then sufficiently familiar with the mechanical detail of
12 the airplane to comment on the practicality of the system's
13 structure, and whatnot.

14 It was either then or in a subsequent call which
15 would have been approximately at that same time, Mr. Hughes
16 requested that the airplane be flown to the Hughes Aircraft
17 airport at Culver City so that he might inspect it and fly
18 in it. I approached Sud with this in mind, and was able
19 to report back to Mr. Hughes in due course, again in a
20 fairly brief interval of time, that Sud was willing to fly
21 the airplane to Los Angeles, and that in order to make it
22 available, it was willing to readjust and rearrange its
23 demonstration schedule to the extent that might be desired,
24 although they hoped it would not require much. I think
25 they planned to have the airplane available one day or a

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2 day and a half, and sandwich it in, so to speak, with a
3 minimum of modification to the Sud demonstration schedule.

4 There were numbers of conversations with Mr. Hughes,
5 with me sort of being a middle man between Hughes and the
6 Sud flight crew, during which recommendations were given
7 to the flight crew as to how to route the airplane to the
8 coast. Mr. Hughes seemed to be concerned with a tornado
9 activity and possibilities of hazard from some recent at-
10 tests, and was anxious that the plane be flown along cer-
11 tain routes to the west coast.

12 I did not accompany the airplane to the coast.
13 However, General Tessier who is the U. S. representative
14 for Sud, and others in the Sud party did. I recall he was
15 joined there by Sud's treasurer. After arrival, the air-
16 plane was inspected by people from the aircraft division
17 of the Hughes Tool Company--Ray Hopper's outfit. I don't
18 recall at the moment how long the airplane was in Los
19 Angeles, but I believe it to be in the order of a week to
20 ten days, or thereabouts. Sud reported that Hughes did
21 not fly the airplane. That he was indisposed at the time.
22 That their contacts had been with Mr. Hopper primarily.
23 Before leaving, however, either Tessier or the treasurer
24 did talk by phone with Hughes.

25 As I recall it, Sud was finally forced to put the

1 airplane back into demonstration, and flew it from that
2 area.
3

4 Sud had offered the Caravelle and it had outlined
5 certain delivery positions for some quantity of aircraft.
6 It became my lot to try to improve these delivery positions
7 through negotiation with Sud. As I recall it now, Sud had
8 plans to expand its Toulouse assembly facility, and at that
9 time had manufacturing components in a number of French
10 facilities.
11

12 After review, Sud gave us what appeared to be the
13 best deliveries that it could offer. These still didn't
14 seem to be quite good enough. As a result of a conversation
15 with Hughes, we undertook on an exploratory basis an inves-
16 tigation of whether or not airplanes could be delivered soon-
17 er if they were manufactured by TWA or Hughes, rather than
18 if they were manufactured by Sud.

19 To understand this, it is perhaps well to recall
20 that Sud had commitments for some time in the future at this
21 time, which tied up their deliveries for a while. The
22 specific plan that was explored was, might be characterized
23 as a backward or reverse approach to production. Instead
24 of starting by manufacturing detailed parts, combining
25 these into sub-assemblies, and then assemblies and then
26 finally into an airplane, the idea was to start as nearly

1 as possible with the major components, possibly first join-
2 ing a wing with a fuselage, to a landing gear, to nacelles,
3 these all being imported in the beginning, and described in
4 the thought that we were pursuing.

5 Then on the possible basis that perhaps Sud to sup-
6 ply certain components in the beginning, where they might
7 not be able to provide completed airplanes because of
8 facility limitations, the production line over here would
9 gradually be expanded in depth to assemble more and more
10 separate components, and finally if the quantities of air-
11 planes justified, to back into the manufacturing business.

12 The discussion was sufficiently serious for Mr.
13 Hughes to request that I ask Carter Burgess not to dispose
14 of an overhaul facility that we were moving out of in
15 Kansas City at the time that we were going to release it
16 back to Kansas City, Kansas, the thought being this might
17 be the initial site for the assembling of airplanes in the
18 event all this worked out to some advantage.

19 (Continued on page 483.)
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1 The reason, as I discussed it with Mr. Hughes,
2 for the Upper inspection of the airplane was that I felt
3 the need for people somewhat more currently familiar with
4 some of the manufacturing details than I was to take an
5 independent look at it, and either support or disagree
6 with the tentative conclusions that I had arrived at on
7 this point.

8 There were numbers of discussions. The end point
9 of it all was that we had to conclude that considering
10 the time necessary to establish a manufacturing organiza-
11 tion, whether it came partly from TWA or wherever it came
12 from, whether it was a division of TWA or whatever it
13 might be, would take time--more time than we probably had--
14 and additionally, Sud, on exploring to greater depth than
15 they had at that time was coming to manufacturing components
16 in these various factories throughout France, came to the
17 conclusion that it could not, even though it wanted very
18 much to establish a facility in the U. S.--came to the
19 conclusion that at that time it could not expand its
20 production of components sufficiently rapidly to accommodate
21 a second production line in the States, at least to the
22 point that it would accelerate production of the Caravelle.

23 This particular approach was abandoned after what
24 I would view would be a very thorough exploration, such
25

1 as I have described briefly.

2
3 Our relations with Sud were always good. Sud
4 kept in touch from time to time concerning delivery posi-
5 tions, orders to others, and so on.

6 Many of these contacts were through General Tessier,
7 although occasionally others would be involved.

8 Considerably later on the Douglas Company and
9 Sud became associated with respect to the Caravelle.

10 During, I think it was 1959--I am not sure--United Airline
11 purchased a fleet of 20 Caravelles of a somewhat later
12 model than we had looked at earlier. These were delivered,
13 I believe, during 1961.

14 The Caravelle, during this intervening period,
15 became established as a very popular airplane in Europe.
16 It was a comfortable airplane that the passengers seemed to
17 enjoy. The Caravelle was and is a smaller jet with
18 limited range characteristics, and appeared to be of a
19 size that could nicely complement TWA's fleet of 880s and
20 Boeings.

21 During 1961 both Douglas and Sud were in touch with
22 TWA, and I understood to see what sort of a deal might
23 be worked out with Sud for airplanes, all with full
24 knowledge and concurrence of my superior, Mr. Tillinghast.
25 The objective here was to come up with a deal, if possible,

1 that would require a minimum cash outlay, or if possible,
2 would permit generating what cash might be required from
3 the airline.
4

5 All in all Sud was cooperative. The deal went
6 through a number of gyrations, and so did the airplane
7 configuration, at least in some particularity. It wound
8 up with General Electric power plants, for example, instead
9 of Rolls-Royce. It was a slightly lower Caravelle than,
10 I think, United had. It had some aerodynamic refinements.

11 This airplane was slated for production commencing
12 in January of 1963.

13 While the contract was signed for the procurement
14 of 20 aircraft, it was allowed to expire.

15 Additionally, Sud have talked about supersonic
16 transport, particularly recently. I have had occasion to
17 review some of these plans with Satre and outside of Sud
18 having discussed now and then whether or not it should
19 continue the Caravelle as it was, or build a bigger
20 caravelle, or smaller Caravelle, and outside of discussions
21 of that character, I think this would be my nutshell recol-
22 lection at the moment.

23 Q Why was the contract for Caravelles allowed to
24 expire in 1961?

25 A I may have misled you. I don't know that it

1 technically expired in 1961. It has since expired. I think
2 it was in 1962 when it technically expired.
3

4 Q I meant the arrangement that had been negotiated
5 in 1961.

6 A As I understand it, the primary contingency that
7 wasn't met-related to financing.

8 Q Financing available to TWA?

9 A Yes.

10 Q Have you fully described the participation of
11 Mr. Hughes or of the Hughes Tool Company or any of its
12 representatives in connection with the dealings with Sud?

13 A As nearly as I can recall it, I might say Mr.
14 Hughes evidenced very keen interest in this exploratory
15 process I described of seeing what could be done to
16 accelerate production, and then also once TWA's require-
17 ments were reasonably satisfied, there may be a combina-
18 tion with that to possibly offer the airplane to others.

19 That is all I recall at the moment, Mr. Davis.

20 Q As I understand your testimony, Sud first
21 approached TWA or you in around 1952 or 1953, is that
22 correct?

23 A Yes. As I said, I am not entirely sure of that
24 timing, but it was about that time. While visiting some
25 of the factories in England, I extended the trip and

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1 dropped in first at Paris for an afternoon's discussion,
2 and then went on down to Toulouse, and returned to Paris
3 for a half hour's discussion, and then left back for the
4 States.
5

6 Q At that time Sud was offering a Caravelle?

7 A Well, it may be putting it a little strong. I
8 think at that time they intended to offer and declared
9 their intentions of wanting to sell the airplane.

10 As I recall it, they were most eager to try to
11 penetrate the American market with this airplane, and at
12 that time--I didn't know it when I went down there, but
13 I soon learned we were the first airline to visit the Sud
14 facility from the U. S.

15 Q What was the type or category of aircraft that Sud
16 indicated it contemplated offering to the U. S. airlines?

17 A Pretty much like it is right now.

18 Q A jet?

19 A Oh, yes. I thought I described it the other day.
20 It is a twin-engine.

21 Q I wasn't sure at that time in 1952 and 1953 they
22 were planning and offering or intending to offer that kind
23 of aircraft.

24 A Yes, sir. It is the same Caravelle. A Caravelle
has always been the Caravelle. It is essentially the

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2 same. There have been increases in the power of the
3 power plant. There have been changes in fuel capacity
4 and other refinements in the airplane, but essentially,
5 if you were to look at two airplanes on the field, one
6 made then and one made now you would immediately identify
7 both as Caravelles.

8 MR. WILLIAMS: What was the passenger load
9 of the Caravelle?

10 MR. DAVIS: I was going to ask my question a
11 little more broadly. I was going to ask him to
12 identify, if he would, the type or category of air-
13 craft with which the Caravelle would be competitive.

14 A It would have been competitive with the Lockheed
15 Electra.

16 Q Electra?

17 A Yes, and airplanes contemporary with that.

18 Q You identified it as a short-range aircraft?

19 A Short to medium, yes.

20 Q Can you identify the category of short to medium-
21 range aircraft that would have been jet aircraft, which from
22 TWA's point of view at least, were competitive for consider-
23 ation with what was contemplated by Sud?

24 A As I recall it, the Caravelle had somewhat more
25 range than the Viscount, but there were a number of route

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2 segments where certainly both could serve and both were
3 contemporary. The Viscount preceded it, but they could
4 have appeared at that time.

5 Q In the category of jets, can you identify the
6 types of jet aircraft which are or were contemplated to be
7 competitive with the Caravelle?

8 A Because of economics the airlines tend to want
9 to fly jets on as long hauls as they can. However,
10 due to route necessity or availability of jets, or various
11 reasons, a number of them fly, even bigger jets, on fairly
12 short hauls. To the extent these aircraft would have been
13 flown on the hauls for which--the length of hauls for
14 which the Caravelle was suitable, to that extent they
15 would have been competitive.

16 Q Competitive with what?

17 A With Convairs.

18 Q Convair 880s?

19 A Boeing.

20 Q Which one--the 131?

21 A I would say 131, or if you look at the Caravelle,
22 say an airplane good for seven or ten years useage--let
23 us say ten years--had we procured it, it would just be
24 coming in and would be good for a long time.

I would include all these airplanes which would

1 fall route-wise into the category the Caravelle would fly,
2 and that would include the 727, for example.
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5 (Continued on page 490)
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2 Q What I am interested in knowing is what was being
3 offered in the sense of interest to manufacturers and manu-
4 facturing jet aircraft in 1952 or 1953, or at the time
5 Caravelle first approached you--what choice, if any, did
6 TWA have for a comparable type of jet aircraft?

7 A There were none available in 1952 or 1953. At
8 that time, as I said, the first airplane was just being
9 built in the factory. It was at an appreciable period that
10 it flew and still later period that it was placed in produc-
11 tion.

12 So there wasn't any availability then, and it would
13 have been premature for any airline, other than a state air-
14 line to have entered into heavy commitments. It would
15 have been a first-class gamble, and then some.

16 Q What I am trying to understand is this: Were there
17 other manufacturers, domestic or foreign, which at that time,
18 namely, when Caravelle was discussing with you its proposed
19 program--what other aircraft manufacturers were offering
20 or indicating an interest in offering a comparable jet air-
21 craft. By comparable, meaning one that would have perform-
22 ed substantially the same service for TWA that the Caravelle
23 might have.

24 A As I said, I am not real certain of the 1952 or
25 1953, I suppose it might have been 1953 or 1954. As I

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2 recall it, the Caravelle emerged somewhat after the
3 initial Comets were produced. The Comet was a long-haul
4 airplane. It was also represented as a good medium-haul
5 plane.

6 I suppose in a certain sense it could be consider-
7 ed competitive to the Caravelle, although I think we
8 looked at the Caravelle more as a short-haul airplane.

9 Q As a short-haul jet aircraft, what I am trying to
10 find out, Mr. Rummel, is whether at that time, whether
11 it be 1952 or 1953 or even 1954--at the time the Caravelle
12 was trying to interest or evoke an interest in TWA for
13 its product, what other manufacturers were offering or
14 programming or planning for a similar short-range jet
15 aircraft.

16 A I don't recall any at that time except to the
17 extent the Comet was short haul. As I said the other day,
18 AVRO Canada did produce a small four-engine jet which was
19 not too far removed from the Caravelle in terms of size,
20 but that was quite awhile before this.

21 Q At that time were there any U. S. manufacturers,
22 that is, Convair or Boeing, or Lockheed or anyone else,
23 who were approaching the airlines with a program of
24 manufacturing a comparable or competitive aircraft which
25 might be competitive to what Sud was offering?

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2 A We had numbers of discussions from approximately
3 1946 on, and I think some clear back in 1945, with a
4 number of U. S. manufacturers on the possibility of
5 their producing jet airplanes.

6 Back in 1945 I had laid down and run a preliminary
7 performance analysis on a small four-engine jet. I
8 discussed this with Jack Franklin. We discussed it with
9 Frye, and as the next step we discussed it with Douglas,
10 and we found that coincidentally Douglas had laid down
11 an airplane that was certainly not identical, but very
12 similar to that.

13 I think in retrospect now both of them represent-
14 ing about the same state of the art at the time--perform-
15 ance figures were comparable, and so on.

16 Mr. Franklin indicated that both Mr. Hughes and
17 Mr. Frye were interested in pursuing this further. We
18 did have discussions with Douglas, but finally concluded
19 that the state of engine development was just premature
20 to move on into jets at that time.

21 Martin approached us at the time Mr. Franklin was
22 still there with drawings of various jet possibilities.
23 They had preview drawings of various sized machines.
24 So did Convair. Both Martin and Convair at that time
25 had a development contract with the military, and were

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developing experimental jet bombers.

Mr. Franklin and I made one trip to San Diego during which we looked at the bomber at the shops while being constructed. We considered technical aspects and looked further at some of Convair's drawings.

I would say that both Martin and Convair at this particular time were exploring possibilities, rather than coming in with contracts and dripping pens.

We also gave consideration to other possibilities of having jets developed. One was a commercial version of the YB-60, which was a large eight-engine jet variant of the B-32 built by Convair.

By way of identification, I recall it as the machine that competed with the initial B-52 plane. I remember being asked by Mr. Hughes to discuss this possibility, or rather say to explore the plane that Convair had with respect to feasibility, which I did by visiting Fort Worth, and talking to their structural and performance engineers. I later was asked to visit Mr. Odum at his ranch and discuss this with him, and I believe Mr. W. C. Rockefeller was there at the time, if I recall. He was there at several such meetings.

Q Was this at the time when Mr. Odum was chairman of the board of Convair?

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2 Q Now will you describe what was contemplated or of-
3 ferred by Douglas at that same time, or during that same
4 period of time we are talking about, namely, from 1952 to
5 1954, or the time that Caravelle was being offered by Sud?

6 A I don't think the model 80 goes back as far as 1952.
7 I am just not certain of the date. It would probably be
8 more towards 1953 or 1954 possibly.

9 As I recall it, Douglas was still pretty well occu-
10 pied with the DC-6B and DC-7 production, particularly dur-
11 ing the latter part of that period. I don't recall exactly
12 when the DC-7 appeared. I don't recall activity to any
13 great extent along this line from Douglas, although they
14 may have occasionally dropped in with some thoughts on
15 jets.

16 Lockheed did look at jets fairly extensively, as
17 time went on, from that time.

18 Q Is it fair to say that at that time Douglas had
19 not developed any particular program of looking towards an
20 offering of jet commercial transports to domestic airlines?

21 A I am a little vague on that point. I know later
22 on they were giving active consideration to building and
23 actually offering airplanes, and I did practically nothing
24 with them, as I mentioned the other day. During this par-
ticular period we gave consideration to some piston air-

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2 planes they were offering.

3 Q Which kind of airplanes?

4 A Piston. My recollection is that they were pretty
5 well taken up with the piston airplanes, and that they
6 were not anxious to move into jets.

7 Q They weren't interested in pioneering a jet commer-
8 cial transport?

9 A My recollection is that they had the piston market,
10 certainly not to themselves, but they had a big piece of
11 it. The airplane was still being ordered. It was in heavy
12 production, and they saw it continuing for some time. As
13 I recall it, not too much was going on, as I knew it, at
14 least, as I recall it, from Douglas with respect to jets.

15 Before then they looked particularly to the smaller
16 jets that I mentioned earlier, although I would not want
17 to go on record and say that they didn't show us previews
18 a time or two. I don't recall the specific instance when
19 they did.

20 Q How about Lockheed? What were they doing looking
21 towards jet aircraft?

22 A The first Lockheed jet transport that I was at all
23 familiar with that I can recall was during the time Lou
24 Koepnick was in charge of staff engineering

25 That was a four-engine jet. As I recall it, the

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2 to date?

3 A Yes, there is, Mr. Davis.

4 On further reflecting on the Caravelle situation,
5 and recalling what was said yesterday, it seems to me
6 that there might be some confusion as to the timing of
7 the Caravelle demonstration here in the States.

8 You may recall I mentioned that we held on to a
9 facility in Kansas City and that at Mr. Hughes' request
10 I contacted Mr. Burgess--I also contacted some others in
11 this regard--but this was during the Burgess regime, ob-
12 viously, which was in 1957. As I recall it, you kept
13 interrogating me about a competitive situation that exist-
14 ed more toward the beginning of the Caravelle exercise,
15 1952 to 1954, and then 1955, and I said I wasn't exactly
16 sure when this trip was, but I thought it was late in that
17 period, and I just want to be clear, on further recollec-
18 tion I can establish that the Caravelle tour was in 1957.
19 I think it was the first half of the year, but I am not
20 sure of the exact dates even now.

21 Q So that in 1957, and after orders had been placed
22 with Boeing and Convair for jet equipment--

23 A This is correct.

24 Q (Continuing)--TWA was still giving active consider-
25 ation to the possibility of the Caravelle program, is that

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be expedited, and I attempted to achieve this also in some of the conversations with Mr. Hughes and in talking to the Hughes office, because my talks with Hughes were of an intermittent nature.

I was cleared finally to go to San Diego, and asked to go there, which I did, but I was asked to please stand by until I heard further from Mr. Hughes, and not to talk to Convair.

During this period there were some conversations with Convair through Bew's office.

I did not personally meet with Convair, although I did meet some of the Convair people socially during the time I was there. I was there a number of weeks. At no time was I cleared to talk to Convair.

In the meantime, our overhaul base personnel plus some of my own working from Kansas City kept pushing Convair for the hydraulic system corrections, and Convair did come through with a crash program to make these improvements, and they were installed in the airplanes, including the airplane that we had in pilot training. This was a plan that followed these considerations. I am not saying that it all was completed while I was there, but it was jelled and became a plan then.

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1 lation to this memorandum.
2

3 Q Why don't you give us your recollection, then, of
4 the kind of discussions or assumptions you were asked to
5 make by Mr. Tillinghast or others during that period, name-
6 ly, in the summer of 1961, and describe and identify the
7 various studies that you did in fact make, and the various
8 assumptions that you made in connection with those studies?

9 A One study during that general period, and I do not
10 recall if it was July, but it probably would have been
11 around that period of time, was a--finally a very brief
12 report, I think called the Tri-Fleet Program, or some such
13 title as that, or Tri-Plane Fleet Program, and I think it
14 showed the estimated cash or capital requirements for the
15 acquisition of a certain number of 990s, 830-Ms, and I be-
16 lieve in addition 20 Caravelles, as I recall it now.

17 I don't recall the particularity of it, but I think
18 such a study was made, and I think in that instance, as I
19 recall it now, the assumption as to numbers of airplanes
20 came from Mr. Tillinghast.

21 Q What was the conclusion of that study, before you
22 leave it?

23 A I am not sure the study itself presented a con-
24 clusion. I would have to look at it.

As I recall it, it presented the capital require-

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2 ments, it may have presented estimates of revenue genera-
3 tion, but I am not certain.

4 Q Can you tell us generally whether or not the result
5 of that study was that it was desirable to have a tri-plane
6 type fleet or that it was undesirable or that it was econo-
7 mical or uneconomical?

8 A Well, as I recall it, it was a piece of our over-
9 all equipment considerations at the time, and as such was
10 related to studies of other fleets of equipment, and as I
11 recall it, the relative value of that particular possibil-
12 ity measured against some of the others that were looked at
13 was such that the others appeared to be better for TWA.
14 But I don't recall that conclusion being in this study
15 which was a plan which was being considered amongst other
16 plans, you see.

17 Q I am not trying to get you to limit your recollec-
18 tion to a particular piece of paper or a particular plan.
19 I am trying to get you to give us a birds-eye-view, if
20 you please, of what you were considering, and, generally
21 speaking, your conclusions, and those of management, your
22 recommendations, the extent to which you were in accord
23 or disaccord with what was taking place.

24 Before you start giving me that, let me clarify the
25 record in one respect. You referred to a tri-plane type

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2 fleet.

3 A I wasn't certain that was the exact title, Mr.
4 Davis.

5 Q I am not talking about the title. I am talking
6 about what you were describing.

7 Will you identify the three types of planes in the
8 fleet that you were talking about so I understand what you
9 mean by type? Boeing was one?

10 A No. As I indicated, as I recall it now, it was
11 the 990s, the 880-Ms, and I think 20 Caravelles. I don't
12 recall the numbers of the 880-Ms or 990s, but this is my
13 recollection.

14 Q You considered the 990 type of aircraft so differ-
15 ent from the 880-M?

16 The 880-M, by the way, is just an 880 with some
17 modifications to it? What is the difference between the
18 880-M and the 880?

19 A There were several 880s. There was a group of
20 880-Ms initially manufactured to Capitol Airlines speci-
21 fications, as I recall. Additionally, at one point we re-
22 ceived a proposal from Convair for the manufacture of new
23 880-Ms, built substantially in compliance with the TWA 880
24 specifications, or Hughes Tool 880 specifications, if you
like.

Rummel

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2 The salient or, I would say, significant differ-
3 ences that I recall between the 880-M and the 880 as types,
4 setting aside for the moment detail differences that would
5 come out of a direct comparison of specifications, but look-
6 ing at only those items that are the same, the 880-Ms had
7 leading edge devices on the wing which were slots and slats
8 to improve the airflow during takeoff primarily and to some
9 extent the smooth airflow during some of the approach con-
10 ditions. As I recall it now, Convair had an airflow prob-
11 lem at one point, and they thought this might help it.

12 The 880-M I believe was offered with more fuel
13 capacity and a somewhat higher rated engine in terms of
14 power output, but I don't recall that difference being other
15 than a transient one. That is, the 880 would finally catch
16 up with it through engine modifications.

17 Essentially, but broadly speaking, the 880-M was
18 closer as a type by far to the 880 than the 990 was.

19 Q Were those differences that you have described suf-
20 ficient to require a classification of that aircraft as a
21 different type of aircraft for fleet operations? In other
22 words, from the point of view of TWA, and the problems of
23 operating an air fleet, are those differences which you
24 have described such that you would categorize an 880-M as
25 a different type of aircraft than an 880?

Rummel

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2 MR. WILLIAMS: He didn't do so.

3 MR. DAVIS: Please. Yes, he has, in effect, be-
4 cause earlier I asked him to identify the three types
5 of aircraft in the fleet, and he said "What we were
6 talking about was the 990, the 880-M and the Caravelle,"
7 and I am asking him now to explain what the difference
8 is between the 880-M and the 880, which they already had
9 in their fleet.

10 MR. WILLIAMS: All right.

11 MR. DAVIS: You will have an opportunity to cross
12 examine him.

13 MR. WILLIAMS: I only want the question to be
14 clear. I have to understand it too.

15 Q Will you try to answer my question, Mr. Rummel, so
16 that I can understand the nature of the problem of an air-
17 carrier when procuring additional aircraft and intergrating
18 additional aircraft into an existing fleet?

19 A When we considered the 880-Ms that had been procured
20 for Capitol we had to recognize the differences in configura-
21 tion between that airplane and the 880s that we were receiv-
22 ing, and by configuration I mean in this case the differences
23 in systems, in cockpits, the items that I discussed hereto-
24 fore. We tried to estimate the cost of standardizing those
25 things which it made sense to standardize economically.

Rummel

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2 As I recall it, we looked at the estimate of the
3 added cost of training pilots on the basis that we would not
4 standardize the airplanes to see how that would come out.
5 We looked at the costs of standardization and the cost of
6 pilot training if the airplanes were standardized, and we
7 compared the two. We took the added training costs over
8 whatever it was, probably a five year period, and so on.

9 In other words, we tried to determine by analysis
10 and estimating techniques the cost of adding this additional
11 group of airplanes.

12 Now, I use the word "type" loosely, I guess, Mr.
13 Davis. I think an 880-II is a different type because this
14 designated a different type, and in this case it in fact was
15 quite different from the 880s that we had.

16 The figure that comes to mind, and I can't be certain
17 of this, was that the total estimated cost for mods, and it
18 was a loose estimate in some respects, I think was a little
19 less than \$200,000 an airplane, but I am not completely sure
20 of that. But this would indicate to some extent the differ-
21 ences, but in arriving at that we didn't totally standardize.
22 We tried to standardize things which had economic or cost
23 significance, or safety implications, so to speak.

24 Since the 880-Is were different from what we had,
25 and since they were being considered as to advisability of

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THE WITNESS: Well, I think it was during 1954, the first meeting could have been in late 1963, I am not certain now--

MR. WILLIAMS: '53.

THE WITNESS: (Continuing)--1953, but in any event, through 1954 a series of highly secretive meetings were held from time to time with Convair people in order to determine what kind of an airplane could be developed or let's say if one could be developed that would be economical if used on TWA's routes and what it could be.

Now, this consisted of meetings sometimes participated in by Mr. Hughes and sometimes with me. As I recall it, Mr. Rourke attended one such meeting in the Beverly Hills Hotel, but I could be confused on that point.

I mentioned these earlier in the testimony. I mention them now to try to put them in perspective. That was the beginning, in a way, of talking to Convair about jets, at least in the period that would more or less directly lead up to the 880.

It was by no means the first time we talked to Convair about jets. I also mentioned earlier, to try to put this in perspective now, I will mention

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it again, that we had looked at the commercial version of the YV-60 at Mr. Hughes' direct request. I say "we." I should have said I did, and then reported to Mr. Hughes my findings on it.

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Q At that time what was the status of your dealings, if any, with Boeing? I am referring now to the time of these secret meetings with the Convair people in 1954 or late 1953.

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MR. WILLIAMS: Excuse me. I object. I don't think that we should have questions interrupting his answer.

13

14

MR. DAVIS: It is for clarification, that is all.

15

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MR. WILLIAMS: All right, if it is limited to that, Mr. Davis, I don't mind. But I would prefer to have a consecutive statement in his answer of what you called for.

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THE SPECIAL MASTER: Let's have a consecutive answer to the question, unless there is some problem of clarification.

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A (Continuing) Also I might say before this time we had considered whether or not the flying needle would offer any reasonable possibilities for use in mail or express

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2 service, and whether or not a commercial variant of it
3 would be practical. This was an exercise with Mr. Franklin,
4 as I recall it.

5 I recall additionally, still to try to get all this
6 in perspective, we had looked at turboprop versions of the
7 twin-engine Convair, but I think that--I am not certain,
8 but I believe most of these proposals came later.

9 In any event, they would not have been in direct
10 competition with the big jets. But they were a jet type.
11 That is why I mention it.

12 I don't know how many different airplanes and
13 designs we looked at during this period. There were
14 numbers of sizes and types. I tried to influence the
15 development of these designs to the maximum extent I could
16 to make them as practical as possible.

17 In this particular period of time there was grave
18 doubt that the state of the art had advanced sufficiently
19 to develop a practical and economical jet transport. In a
20 way, this was an effort to try to push the state some,
21 and to explore with Convair what might be done.

22 I recall that I was trying to determine whether or
23 not one airplane type could be built to satisfactorily
24 serve both international and domestic operations. If this
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2 was feasible technically and economically, I felt there
3 would be economy in this course of action, and I felt
4 it would be better for the manufacturer because his
5 market would be broadened and he would probably be more
6 apt to proceed.

7 During the latter part of this period of time I
8 became aware of, I believe initially through Convair, of
9 the development of advanced engines which were rather
10 quickly recognized as a potential difference between success
11 and failure economically of jets.

12 When this occurred it became clear that rather
13 than talk about turboprops and jets we had a chance of
14 developing pure jets that would be suitable for international
15 service, whereas up to this time there was doubts as to
16 the range of the jets with jet engines now rather than
17 turboprops.

18 Convair then proceeded to lay out various designs
19 with myself participating.

20 On occasion, I would discuss design ramifications
21 or possibilities with some of my associates in TWA, but
22 generally it was a very closely held development. Sometimes
23 it was discussed without specific reference to Convair
24 or what it was doing. Sometimes I requested studies
25 which I thought would produce information and might be of

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the Lockheed negotiation going, and to undertake negotiation with Convair for the model 18.

I might say, the model 18 was not the model 880. It was a larger predecessor generally similar to what Boeing finally built, but at that time believed to be somewhat better than either Boeing or Douglas' offering, and to explain that I perhaps should say that my recollection is that at that time Boeing and Douglas were both offering domestic jets, and had not taken the step to international jets, where we were seeking, Hughes and I, to get an airplane that could serve both areas. I think I viewed all these efforts as representing TWA's best interest, and I certainly wasn't aware of any conflicts of interest.

The model 18 development spanned quite a period of time, during which specifications and contracts were developed. I reported to Hughes from time to time. I was cautioned not to discuss this with TWA management on numbers of occasions.

Mr. Hughes, however, knew and understood that I was bringing in TWA experts from time to time to aid and assist in specific areas.

Now, I am not saying that each and every person was cleared. I think he had that confidence in me.

Rummel

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2 He simply knew that I was doing this because I would
3 ask if this would be quite all right, and he said on a
4 limited basis, certainly, but keep the group small, as
5 I recall it.

6 Hughes had numbers of discussions with Convair
7 or let me say Convair reported he had had such discussions
8 and while I can't be specific, I am quite sure that Mr.
9 Hughes mentioned it a time or two.

10 The model 18 was tailored as much as I could make
11 it to satisfy TWA's route needs and its requirements.
12 We tried to make an economical airplane, and one that was
13 advanced over what we understood Boeing and Douglas were
14 offering, but in this period we were not doing any work with
15 Douglas. This is one of the periods I mentioned earlier,
16 where we weren't working with them.

17 The numbers of airplanes I am a little vague on.
18 I remember some of the early drafts had as many as 30,
19 but I don't recall the numbers ever having been really
20 set with Convair. We were talking about getting the
21 program under way, and I don't remember coming to any
22 final numbers on the model 18, but this could have hap-
23 pened.

24 I think it was in--a little after mid 1955 that
25 Convair came to the conclusion that there wasn't sufficient

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1 difference between the model 18 and the airplane that
2 Boeing and Douglas then proposed to justify the risk.
3 During the period that preceded this, as I recall it,
4 both Douglas and Boeing had announced international ver-
5 sions, and had also changed their fuselage around, as I
6 remember, both enlarged the fuselage, and when they got
7 through with these things, their improved airplanes, while
8 different, were not spectacularly different from the one
9 I had been working and Mr. Hughes had been working with
10 Convair on.
11

12 Now, as far as I knew, during this particular period
13 while there were some review meetings prior to the detail
14 negotiation with Convair concerning the configuration of
15 design, I don't recall meeting with Hughes participating
16 during that period we were working directly on the project.
17 I think he was relying primarily on me to have the air-
18 plane configured to reflect TWA's requirements.
19

20 There were a number, however, of technical dis-
21 cussions between myself and Hughes on a good many features.
22 Hughes was most keenly interested in almost myriads of
23 technical aspects, and to the extent that I could, why,
24 these would be discussed.

I was advised later that there were meetings
during this period between Convair and Hughes that I

Rummel

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We also looked at additional four-engine airplanes which were arranged a little differently than the model 18. One of the bigger airplanes was an attractive appearing double-deck airplane, and laying it out, for example, we had gone through some structural analysis, an effort to determine whether it was more efficient to build a double-deck airplane or a large single diameter airplane, and we came to the conclusion, which Convair concurred in, that the double-deck was better.

Some of these ships I laid out to illustrate what I had in mind, and in order to interest Convair in exploring these possibilities further, because their frame of mind at the time was, as I recall it, was generally that they did not want to build large jets, but seemed to be bending toward building smaller jets.

Mr. Hughes showed fairly keen interest over the phone, as I recall it, in the double-deck airplane. I at the moment do not recall Mr. Hughes seeing the actual layout, but there could have been a meeting along this line.

This got to the point where Convair did become interested, and the project, as far as I was able to determine, had the support of the San Diego management, at least it had that support to the extent that it presented the plan for building this airplane to the General

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Dynamics board, or at least it was so reported to me.

The board, as I indicated earlier, turned it down. The only explanation that I recall is that it was simply too much to undertake, and also that to undertake a big jet at that time, with Boeing and Douglas moving forward, and having already captured orders, did not make too much sense, because while all this was going on at San Diego, the delivery positions toward the end of this operation were in fact being snapped up by our competition at Boeing and Douglas.

Now, it was during part of this that we--I say "we"; it was a discussion with Hughes now that I am referring to--gave consideration to the need for TWA having jet aircraft, at least contemporaneously with our competition, and preferably before. We had not been unmindful of the time it would take to develop airplanes, but the emphasis was on developing these newer airplanes, and it became very clear that serious consideration should be given to procuring Boeings or Douglasses.

Now, Boeing had a distinct advantage, in my view, in two areas. One was the background of experience in building big jets, and the other was that they had a significant lead over Douglas in initial production.

Negotiations were undertaken with respect to

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proposal by Convair. He asked that I review it. He described it briefly. He advised that Convair would be getting in touch with me.

The thing that sticks in my mind here that recalls this is that I had another commitment which prevented my seeing the Convair people right at that time, but it turned out that I saw them anyway, but under conditions somewhat different than had been planned. They chased us from Kansas City to Seattle, and we met at Seattle, and I believe this is the first time that the 880 was reviewed by myself or Rourke.

It was considerably smaller than the airplanes we had been working on. This was in the winter, I think, between 1955 and 1956, but I don't recall what month. I think fairly late in 1955.

We, as I recall it, were not particularly favorably impressed with the 880, and tended to favor, from TWA's point of view, placing a larger Boeing order. However, we continued to work with Convair.

Now, during this ensuing period, which I am not certain of the time precisely, but I think in early 1956, or maybe late 1955, Mr. West was requested to do some preliminary contract work at Convair with respect to the 880, and it's my impression that he worked quite closely with Mr.

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1 Hughes during this period of time. He was out there quite
2 a while. I also had a few discussions with Mr. Hughes on
3 the 880, and Mr. West would occasionally discuss some
4 phases of the contract.
5

6 I remember discussions as to the nature of the
7 specifications which should be attached. At this point Mr.
8 Hughes did not want my or TWA's active participation as he
9 had had it before on the model 18 in the model 880.

10 In the meantime, we were proceeding with Boeing
11 negotiations. I recall one meeting in San Francisco where
12 Mr. West came up from San Diego to meet with me. I was
13 attending a NASA--I think it was then NACA--committee meet-
14 ing.

15 I reviewed the papers with Mr. West, and saw the
16 need for contacting Mr. Hughes with respect to the specifi-
17 cations, and the way Convair apparently wanted to handle
18 that part of the deal, and I placed a call and got him im-
19 mediately in that case, discussed my views and the strategy
20 I had in mind.

21 I had already discussed it with Mr. West, and he
22 had agreed this would be a good thing if Mr. Hughes would
23 agree, and he did agree, and as I recall it, that basic
24 strategy was followed pretty much throughout the 880 deal
25 on our part.

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2 AVRO, and the project Greenland were still active.

3 Now, the project Greenland may have become active
4 after this. This was the project that I had referred to
5 earlier, perhaps not by the code word, but as, to identify
6 it, as the one that involved the filing in Washington with
7 respect to--that is, before the CAB, as I recall it--with
8 respect to Hughes obtaining permission to build airplanes
9 for TWA.

10 What I am trying to pin down, though, in mind,
11 and I guess I am doing a poor job here, is whether at
12 the time the order for the eighteen airplanes was signed
13 we might have abandoned the AVRO, but I don't think so.
14 The reason I don't think so is that the order for the 300
15 engines bore a relationship to either the AVRO or an AVRO-
16 like project.

17 As I recall it, the order for the engines was
18 placed before we went firm on the 880. At the moment I
19 can't recall whether it was after we placed the order for
20 the--well, no, I guess--well, I am not certain of my
21 recollection, but it probably was after the order was
22 placed for the 331s, but it might not have been.

23 I realize I may be being a bit confusing. I am
24 trying to recall out loud probably what I ought to think
25 through before I speak. Let me give you a reference that

1 would pin this down more, and that is this, that the
2 thing that initially brought about the placing of the order
3 for engines with Pratt & Whitney was the fact that Pratt &
4 Whitney had announced a price rise--as I recall it, it was
5 5 per cent--in engine price to the industry. This had been
6 announced a number of months before it was effective.
7

8 The down payment required to be made for Pratt
9 to accept the order was also, as I recall it, 5 per cent,
10 or thereabouts.

11 Since engines were generally in short supply, at
12 least during the initial period, or it was thought they
13 would be, because everybody, Douglas, Lockheed--excuse me--
14 Douglas and Boeing, was clamoring for engines, and engine
15 availability, as I recall it, was pacing the availability
16 of the airplanes, since they were in short supply, it
17 occurred to me that it would be a good move to order our
18 spares and save the 5 per cent, because if we didn't order
19 we would lose 5 per cent, but the worst that could happen,
20 if we ordered and then something occurred, so we didn't
21 fulfill the obligation, would be to lose the 5 per cent down
22 payment.

23 On the other hand, they were in short supply, and
24 it seemed to me that it wasn't a bad investment.

25 The date would help bring this in focus. This is

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2 a date which I am sure could be found somewhere, the price
3 rise, the effective date of the price rise.

4 Now, I went to Hughes and saw him personally at
5 this time. As I recall it, I had mentioned this engine
6 problem, the proposition, on the phone earlier. I had
7 occasion to see him--I think it was in the Beverly Hills
8 Hotel--along with a chap from AVRO, and I took the opportu-
9 nity to point out that we had a deadline on the engines,
10 that if we were going to move, and he wanted to save this
11 5 per cent, and I thought he should, that we--he should be
12 moving, and he at that point authorized me to negotiate
13 with Bill Gwinn.

14 As I recall it, the instructions weren't specific-
15 ly limited to talking to Bill, but dealing with the top
16 people at Pratt & Whitney. But the idea was to obtain
17 assurances of delivery positions, as I recall it, without
18 actually ordering, and to obtain premium delivery positions.

19 Now, at this same time we were--well, this would
20 help fix the date--as I recall it, we were still jockeying
21 for delivery positions to some extent with Boeing, and
22 certainly it was a factor in the AVRO consideration, so
23 that we--in any event, let me say, Hughes wanted the
24 earliest possible positions that he could get.

25 I undertook a telephone negotiation with Gwinn,

(Excerpts from Deposition of Robert W. Rummel)

asking that, in effect, that positions be preserved, but that we put off the day of formal commitment.

(Continued on page 964)

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In the end, and it was some time later, a substantial order for spare engines was placed for the JT4, far in excess of the 60 that represented our estimate for the number that would be required to go with a fleet of eighteen, and for I believe 40, if I recall correctly, JT3s.

I might say the reasonableness of these numbers against the size of the fleet went like this, that if TWA obtained all of the airplanes, then it would need these engines. If another airline with somewhat comparable routes obtained the airplanes--I am not suggesting that this was a specific plan; I am just saying this was the reasonableness of it--that in that event, then it would probably require the same number of engines.

Now, if the fleet somehow became split between airlines, and were operated as two groups, or three or four, then reasonably the number of spare engines that would be required, I must say all things are not equal, but as a reasonable thing the total number of spares in that event that would be required would be greater than that which would be required for one airline and one fleet. But in any event the orders were finally placed.

Perhaps while I am on engines I ought to wind up this particular phase and then get back more directly to

what I think you asked.

As I recall it, we wound up with an exchange of wires with Pratt & Whitney that was based on--well, I think it was around 150 engines. I don't recall the precise number.

Mr. Cook was involved quite directly in this exchange of wires, I was, Mr. West was, and in the end, Mr. Gay was, as I recall it.

I had been unable to obtain the delivery positions that Mr. Hughes desired. I must say that the delivery positions that we asked of Pratt was based on an assumption of need that went like this:

First we had TWA's need for engines, which was related to the delivery schedule for the airplanes, all on the assumption that the airplanes were coming to TWA.

Then, additionally, I assumed, as had been discussed with Hughes, that assuming a minimum lead time requirement for the development of a new airplane such as the AVRO, in other words, assume that everything went their way with respect to moving forward with the project, completing it in the quickest time, and so on, what would the earliest need dates be for additional engines to do two things, be installed in the airplanes, and secondly, to provide spares for an assumed airline operation.

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2 This was done, and this was the thing which I
3 used as a basis for negotiating the specific requirements
4 with Pratt, and I think at the time I had been instructed
5 to not discuss the derivation of these need dates with
6 anyone, and as I recall it, I did not discuss it with
7 anyone, including Ray Cook and the others.

8 I remember when we got to the--an impasse, that
9 is, when we did not succeed, when I did not succeed, in
10 prevailing upon Pratt to produce the delivery positions
11 that Hughes wanted, as I recall it, Ray Cook was in touch
12 with Hughes, and at least I was advised the following day
13 that the Hughes solution to the delivery problem was to
14 double the order, and at that point the order was increased
15 from 150, nominally--as I say, I don't remember the exact
16 number--to about 300 engines, and wires went forward
17 either that evening or thereabouts placing the order.

18 As I recall it, at that point Mr. West and I were
19 at my home in Kansas City. I have the impression now that
20 Ray Cook was in Houston and Bill Gay was in Los Angeles.

21 I was not talking directly to Hughes on this at
22 that particular time, but there were many phone conversa-
23 tions back and forth that evening. I think we wound up
24 around 1 or 2 o'clock with the papers finally being
25 kicked out of Houston.

1 I should say I believe wires were sent out of
2 Houston along with some money which made it a firm deal.

3 I am sure the people in TWA knew about the fact
4 that we were negotiating for eighteen rather than some
5 other number of 331s. I do not recall either being asked
6 to clear that internally by Hughes or being a party to
7 any such clearance, so I would have to assume at this
8 point that it didn't happen.

9 Numbers of our equipment programs, though it was
10 not unusual to obtain last minute expressions from TWA,
11 I don't recall it in this case. I do not recall handling
12 the papers in the end, that is, handling them on to Hughes
13 Tool for signature or being asked to, although I did have
14 numbers of discussions with Hughes during the development
15 of the contract and the specifications or various points
16 that he would inquire into or that I would bring up
17 thinking he had an interest in it.

18 The papers were in fact signed by Hughes Tool.
19 I think they probably went to Houston and the signatures
20 were placed on them there, but I am not totally clear
21 on exactly what happened at that point.

22 I mentioned earlier that TWA had handled provi-
23 sioning for the Lockheed 1649As in the name of the
24 Hughes Tool Company by its authority up until the time
25

(Excerpts from Deposition of Robert W. Rummel)

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2 that the contract for those airplanes was assigned to TWA,
3 at which time TWA continued, except then it did it for
4 itself.

5 The provisioning on the Boeings was handled in
6 a similar way. There was an exchange of letters between
7 Hughes Tool and TWA that set TWA up within certain
8 monetary limits to provision the 131 fleet and the 331
9 fleet.

10 I might say that it was perfectly obvious then,
11 as it is now, that a fleet of airplanes without provisioning
12 is a pretty useless thing. Spare parts are needed to
13 make the fleet productive, and normally provisioning goes
14 hand in hand with airplane delivery, and to some extent
15 actually precedes it, and the same rationale that I
16 mentioned on spare engines applied to provisioning.

17 I estimated along with the collaboration of Mr.
18 Shaunty, Mr. Reynard, the amount of money that could
19 reasonably be required to provision the airplanes on the
20 basis that these ships would be used by TWA.

21 I remember one meeting included Ray Dunn, at which
22 time we thrashed over what appeared to be fairly high
23 estimates in an effort to reduce the amount of provision-
24 ing money.

25 At this particular time the jets were new, they

1
2 have been told numbers of times that Hughes was interested
3 in the DC-4E development. Here again, it was before my
4 time with the company.

5 This development was a little unfortunate, because
6 each airline apparently, as the story goes, wanted every-
7 thing in the airplane, including a kitchen sink, and it
8 became apparent that the airplane would not be finally
9 the airplane that was envisioned when it was ordered.

10 As I understand it, Mr. Hughes followed this pro-
11 gress quite closely. I don't know whether it was through
12 Frye, or directly or what. I might say the principal
13 source I had for the story was through Mr. Ellinger who
14 was close to things of this type that was going on in TWA.

15 Mr. Hughes set out to have a better airplane
16 developed quicker. This finally resulted in the develop-
17 ment of the Boeing Stratoliner, which turned out to be
18 the first pressurized airplane in domestic--I think in ser-
19 vice anywhere--that is, in commercial service anywhere.
20 There had been pressurized ships before.

21 This was produced a considerable period before the
22 DC-4, as distinguished now from the DC-4E, or the C-54
23 series finally emerged.

24 The DC-4E was cancelled, and when Hughes, or
25 Hughes in combination with TWA worked a deal with Boeing,

Rummel

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1 then our participation in the Douglas deal for the DC-4E
2 was dropped. It wasn't long after that, as the story
3 goes, that the DC-4E folded as a project, but as I recall
4 it, a prototype was developed and did fly, but it was not
5 placed in production. It just didn't turn out as people
6 thought it should.
7

8 Later on the DC-4 was developed, as far as I know,
9 by Douglas, for the military. I should have said the
10 C-54--which was what we had in the International or Inter-
11 continental Division under contract with the government.
12 As I recall it we received the first lot of those from
13 the Douglas factory.

14 I might say the old Boeing Stratoliner, five of
15 which were procured for TWA, and delivered after appreciable
16 developmental delay, did wind up initially in the Inter-
17 continental Division operation, and were later supplanted
18 by the DC-4s.

19 Q Earlier in your testimony you said that "We looked
20 some years ago at a Boeing Stratocruiser 307." Can you
21 identify what you were referring to?

22 A The ship I was just referring to was called the
23 Boeing Stratoliner. The number, as I recall, was
24 the model 307. The Stratocruiser was entirely different--
25 a later airplane that Boeing developed. So my earlier

testimony, if I said it was the 307 I was probably wrong, but now I can't think of the model number.

Q We will pick it up in sequence. Can you describe what information you have with respect to the acquisition or interest of TWA in the Boeing Stratoliner 307--the way it occurred, and what part, if any, Mr. Hughes or the Hughes/Tool Company had in that regard?

A Here again this is long before I was with the company, Mr. Davis, and I can only relate hearsay and that sort of thing.

Q I would like to have your understanding of what took place.

A One of the activities, as I recall it, that occurred prior to the Stratoliner development, but which was finally related to it or influenced it, was the very high-- what was then very high altitude flights by Tommy Tomilson in a Northrup Gamma, and I recall being advised by Tommy and others that Hughes had an extremely keen interest in the results of these high altitude flights.

I must say that I had the impression that he was instrumental, that is, he was having the flights undertaken. I can't state that as the fact. This is the story as I recall it.

In these flights TWA definitely showed leadership,

Rummel

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1 with respect to supercharger developments, which made
2 the flights possible, and in high altitude navigation.
3 I think it was with this background that Hughes and TWA
4 went to Boeing.
5

6 I should say too that the 307 Stratoliners had,
7 I believe, essentially the same wing configuration, and
8 the same power plant arrangement, but not the mechanical
9 configuration as the early B-17s, and that the big
10 pressurized fuselage, and the airplanes developed for
11 Hughes and TWA were an adaptation of B-17 techniques,
12 were re-applied in an advanced way with pressurization
13 and other things that the 307 had.

14 (Continued on page 1145)
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Rummel

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1 I don't know whether this was initiated by Boeing
2 or Hughes, but I understand the switch was made from
3 Douglas to it.
4

5 After TWA received the five, they were placed in
6 commercial service, and the five were later signed over
7 to the military as were many of the DC-3s. That may have
8 been what happened to some of the DC-2s. I am not sure
9 now--at the start of hostilities.

10 After the war those five airplanes were taken
11 back, completely renovated. Some new design features were
12 put in, and then they were flown for a number of years in
13 TWA commercial domestic service.

14 They finally retired them because of economic
15 obsolescence.

16 Q That brings us to the period in which you were
17 active.

18 A No, sir, I didn't quite make that clear. I was
19 with the company at the time that the Stratoliners came
20 back and were then operated.

21 Q Then, as I recall, you earlier referred to the
22 development of the Lockheed aircraft--the fleet acquisition
23 by TWA. I would like you to describe now what you know
24 about that development, and what took place at TWA, and
25 the part, if any, played by the Hughes Tool Company or

fwp

Rummel

1201

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3 A The next program finally resulted in the purchase
4 of a fleet of 749As as I recall it. The 749A was competitiv
5 with the DC-6B. At least, both were competing for Hughes'
6 and TWA's business.

7 The discussions surrounding this acquisition involve
8 Hughes personally, but also a great many people in TWA;
9 Mr. Damon was involved, Mr. Leslie, Mr. Cocke, Mr. Collings,
10 myself, and others.

11 There were numbers of conversations by phone with
12 Mr. Hughes wherein performance figures were discussed on
13 the airplanes, the direct operating costs were discussed,
14 and so on, and I believe that it was during this negotiatio
15 that the meeting at Douglas occurred that I referred to
16 earlier.

17 As I recall it, at one point we ran a study showing
18 the effect of--the economic effect of staying with a
19 basic type that we already had, the Constellation, as com-
20 pared to going to a new fleet.

21 Mr. Leslie participated in this, along with one of
22 two of his people, along with Mr. Rourke and myself.

23 This information was done--this study was made at
24 specific request of Mr. Hughes, as I recall it, and the
25 results given to him as well as to Mr. Collings and

Rummel

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2 I must say that I could be confusing this particular
3 sequence with the 1049G negotiation, but I think it occurred
4 at this time. I am not positive.

5 As I recall it, I favored the DC-6B, I believe
6 that Mr. Collings favored the DC-6B, as I recall it, Mr.
7 Hughes favored the DC-6B, although I must say that it
8 wasn't always easy to know what Mr. Hughes favored and he
9 didn't favor.

10 I couldn't always tell whether he was negotiating
11 with me or what his position really was. But that he had
12 any purpose in negotiating with me, but sometimes he would
13 seek out additional facts and take a position maybe to do
14 this. I just didn't know. But I had that impression.

15 Mr. Damon was opposed to the DC-6B, or I had the
16 impression he was opposed to dealing with Douglas at this
17 time.

18 The result, as I recall it, of this state of affairs
19 was that some additional studies were made, additional time
20 went by, and finally Hughes agreed to go the Lockheed rather
21 than Douglas.

22 Now, I might say that during this time things were
23 somewhat in a state of limbo, so to speak. Negotiations
24 continued with both parties, and both airplanes seemed to

am certain that this must have been done. And to Mr. Damon,

Whether there were any meetings after that or not, I don't recall.

Q I was referring to meetings at which representatives of competing manufacturers were invited to present these points favoring their respective products.

A Well, the time that I referred to when Lockheed and Douglas representatives came to Kansas City to come to agreement on performance claims, this was done I believe at the suggestion or request from Mr. Hughes.

It seemed to me to be a fairly delicate situation, as I recall it, and if I recall correctly, I approached the manufacturers myself suggesting that this be done, and that they have people available to do it. So I think it is safe to say that insofar as the contacts with manufacturers were concerned, that was arranged through me.

Now, whether Hughes had talked to them on that same point or not, I couldn't say at this time.

Q Who would attend on behalf of TWA, or who would attend--

A This particular meeting I am talking about, Mr. Davis, was purely a technical meeting to try to iron out who was right with respect to estimated performance, TWA, Lockheed or Douglas.

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Rummel

DX45

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1 that. I had that impression too.

2 MR. DAVIS: Maybe I am wrong then.

3 THE SPECIAL MASTER: Mr. Rummel, if you will,
4 clarify the difference between a turbojet and a
5 turboprop, as we have been using the terms.
6

7 THE WITNESS: Mr. Zeller is correct, Mr.
8 Special Master. A turbo-propeller, or turboprop, as
9 it is called, is a turbine engine that drives a
10 propeller. A turbojet is a turbo engine that has
11 no propeller.

12 BY MR. DAVIS:

13 Q In 7, when you refer to a high speed turbine powered
14 aircraft, you were referring to a pure jet?

15 A Well, not necessarily.

16 Q I didn't think so.

17 A Not necessarily. Item 6 and 7 are two different
18 items.

19 Q In my question I was combining them to get you to,
20 first of all, identify what happened--did the industry do
21 something or did it not, was TWA a leader--and again I am
22 trying to refresh your recollection as to what took place
23 subsequent to or at or about 1951 rather than prior to 1951.

24 THE SPECIAL MASTER: The objection was made that
25 the time should be fixed, and I take it the question

Rummel

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10, 1949. On April 18, 1950 that airplane was the first jet to fly mail in U. S. history. It flew between Toronto and New York.

I am merely now placing the time of the development of that particular vehicle.

The Comet first flew July 27, 1949, and the first Comet was delivered to BOAC on December 1, 1951. The first Comet IV was redelivered to BOAC on September 30, 1958. This was after major mods that were put in in the course of construction of that airplane which followed the grounding.

As I recall it, it was the Comet IV that Hughes was particularly interested in, that I testified to, which involved the Chicago meeting. The Comet IV first flew April 27, 1958.

The Electra development was undertaken in earnest by Lockheed, and by that I mean it became a full-fledged project, during the summer of 1955. The first delivery of the Electra was to Eastern Airlines on October 20, 1958.

The Britannia prototype first flew during August of 1952. The first production airplane first flew September of 1954 out of the Bristol factory in England.

Now, the Canadian variant of the Britannia was undertaken during April of 1954. The Canadian Britannia.

Rummel

DX 43

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1 there was some sort of a discussion with George that bore
2 on that, or it wouldn't be in this letter.

3 Q That is what I am interested in.

4 A Well, I don't recall that specifically.

5 Q You don't recall what you were discussing with Mr.
6 Spater at that time which produced this closing sentence?

7 A Well, it may have been--I am not sure of the tim-
8 ing--it may have been during this period that we were
9 involved in Project Greenland, but I am really not sure
10 about that.

11 That was the project I mentioned before, to re-
12 call it to you, that involved Hughes manufacturing his own
13 airplanes.

14 But I am not--I can't be sure whether we got in-
15 to that one at this time or later, but I think that may
16 well have been in this particular period of time.

17 Q Do you recall discussing with Mr. Spater Project
18 Greenland?

19 A Oh, yes. But not in relation specifically to this.
20 That's my problem.

21 Q When we resume after lunch I would like to have you
22 describe to me the nature and scope of your discussions
23 with Mr. Spater with respect to Project Greenland.

24 A All right.

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THE SPECIAL MASTER: We will recess until 2:00

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o'clock.

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(Whereupon, at 1:45 p.m., a luncheon recess was

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taken)

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AFTERNOON SESSION

2:00 p.m.

ROBERT WILAND RUMMEL, resumed
the stand and testified further as follows:

EXAMINATION (cont'd) BY MR. DAVIS:

Q Mr. Rummel, do you have any better recollection now
of the conversation that you had with Mr. Spater at or about
the time of this letter marked as Defendants' Exhibit 174?

A I don't remember the conversation, Mr. Davis, but on
mulling it over during the lunch hour, I am quite sure that
it could not have been on Project Greenland, because trying
to slot these things out in time, I am quite certain that
Project Greenland occurred while we were still negotiating
the Convair 440, which would have put it back some time in
1956, rather than at this time, so I think it is safe to say
that it wasn't on that. I wasn't certain before lunch as
to the timing.

Q Do you recall discussing the Project Greenland with
Mr. Spater at some other time?

A Yes.

Q Let me have your recollection with respect to those
discussions.

A All right.

Q Identifying the time, those present, if you recall,

Rummel

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2 how the subject came up, what the purpose of it was, re-
3 lated pertinent portions of the actual discussion which
4 took place.

5 A All right. As I say, I don't think it had any
6 relationship to this. I think this appeared very much
7 later on. There was a meeting in Mr. Spater's office
8 here in New York on Project Greenland attended by Raymond
9 Cook, myself and Ray Hopper.

10 As I recall the discussion, it was primarily re-
11 lated to determining what reasonable substance an applica-
12 tion could have to further Hughes' interest or apparent
13 interest, at least, in manufacturing airplanes. This
14 related to the development of an application that was
15 later filed before the CAB along this same line.

16 I don't recall the exact length of the meeting,
17 but it was several hours at least.

18 Q Do you recall approximately when that was?

19 A Well, not precisely, but it was, I am quite sure,
20 during either spring or summer of 1956. It may have
21 been the spring.

22 Q Can you recall or can identify the airplane
23 which was being considered?

24 A No. One of the problems was that we couldn't
25 identify the airplane.

Rummel

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2 Q Do you know what happened to Project Greenland,
3 how long it was under consideration?

4 A Let me say the application was filed.

5 Q With the CAB?

6 A Yes.

7 Q Then what happened to it?

8 A Well, I don't recall precisely. I think the
9 CAB set a hearing date. If I recall it correctly, the
10 hearing date was put off at least once, and I do not know
11 if the application was withdrawn or what happened, but
12 I am quite sure it was never acted upon by the CAB.

13 Q Had you had some conversations with Mr. Hughes
14 relating to the nature or scope of this project?

15 A There had been--there was at least one discussion,
16 and possibly more, that dealt primarily with generalities.
17 As I recall it, he did not want to definitize the airplane
18 or limit it to a specific airplane project. He wanted
19 it made clear that he intended to have the right to
20 produce airplanes which were markedly superior to those
21 that were then being offered, and a few generalities
22 of that type.

23 I don't remember all the specifics. There was
24 a meeting with some general whose name escapes me at
25 the moment out in--well, in the Beverly Hills area.

Rummel

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One evening Ray Hopper and I and the general chatted about this project. I believe the general was Hughes' Washington representative, but I am not sure now. I should know the name, but I don't recall it.

Q Have you now given us everything that you can recall with respect, first, to the meeting in Mr. Spatex's office attended by Mr. Cook and Mr. Hopper and yourself? Have you now fully described all that you recall with respect to that meeting or discussion?

A No, I don't think so.

Q Would you please do so then?

A I would be glad to. Ray Hopper, as I recall it, ventured the opinion that Hughes was primarily interested in building cargo airplanes, that he saw a tremendous market for cargo airplanes.

It developed, though, that Ray had not discussed this with Mr. Hughes, and as I recall it, at the time had not even been in touch with him for quite a long time. We had difficulty in handling the question of how to obtain CAB clearance on what appeared to be the desire, that is, broad authority, to manufacture airplanes for TWA, and I don't think it was limited to TWA, without being specific, other than talking about superior or better types.

Rummel

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As I recall it, the question addressed to Spater was one of obtaining his professional opinion with respect to handling matters at the CAB. I think, as I recall it, Mr. Cook was attempting to have the papers constructed in a way that reflected Mr. Hughes' desires, and I was attempting to handle those parts of it that had to do with defining and still not defining what the airplane might be, because I didn't know what it was going to be, as I recall it. But that's about all I recall now.

Q Do you have any further information with respect to the circumstances which developed relative to either a withdrawal of the application or what happened to it?

A Well, I have the impression that it was put off because Hughes was out of town. In addition, I have the impression that the hearing was postponed because specific instructions couldn't be obtained from Hughes.

I am not entirely sure, but this is what I recall Ray Cook telling me. I do not recall any of the circumstances relating to either its withdrawal or whether it ran out on some limitations factor. I just don't know.

I am quite sure, though, that it didn't--there was not a hearing on it.

1
2 Q Did the Hughes Tool Company ever take any steps
3 to actually commence or prepare for the commencement of
4 the manufacture of any aircraft that you know of?

5 A I don't know. The papers that came from the
6 CAB asking for further and more specific data were dis-
7 tributed, I received a set of them, and these were dis-
8 cussed with Ray Cook, and, as I recall it, Ray advised
9 not to go into any detail, simply to be cognizant of the
10 papers, until I heard further. I might say too there
11 was a preliminary meeting in Kansas City, or at least a
12 discussion in Kansas City, prior to the meeting with
13 Spater in New York, at which time Ray and I discussed--

14 Q At which what?

15 A At which time Ray and I discussed some of the
16 facets of the proposal, including definition of airplanes.

17 Q Will you give us also your complete and total
18 recollection of that meeting?

19 A Well, I am not clear, Mr. Davis, on exactly what
20 happened. I have the impression now that the main topic
21 of discussion was to broaden the language. It may well
22 be that Ray had a draft at that time. I am not certain
23 now, so I can't be specific.

24 Q Basically, it related to the application to be
25 filed with the CAB, is that correct?

1 A Yes. It was my understanding Hughes had made
2 the decision to build airplanes, and I think most of us
3 assumed this was to be in Florida, and this application
4 was filed to permit one heavily engaged in air transporta-
5 tion to also build airplanes.

6 Q Apart from the discussions, whatever took place
7 in connection with the application to the CAB, and the
8 request of the CAB for further information, do you know
9 what, if anything else, was done by the Tool Company in
10 preparation for or implementation of this decision which
11 you have identified by Mr. Hughes to build airplanes?
12 Do you know of anything else that the Tool Company did?

13 A I don't really know. I recall Ray indicating that
14 Mr. Hughes had options on a great deal of land in Florida,
15 and that he assumed that's where the factory would be
16 built. But as to what they in fact did or didn't do,
17 no, I don't know.

18 Q Apart from the possibility or whatever Mr. Cook
19 told you as to options on land in Florida, is there any-
20 thing else that you know that the Tool Company did?

21 A I don't recall anything at the moment, Mr. Davis.

22 Q Do you know of anybody else at TWA or associated
23 with TWA who knows any more than you do about Project
24 Greenland?
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A No. I might say that the term "Greenland," as I recall it, was applied to the project by Ray Cook. This is a code word.

Q I understand that.

A No, as far as I know, this was one of those items that at the time was secret, and as I recall it, Hughes did not want anyone at TWA to know about it.

Now, whether anyone in fact did, let me say if they did, I don't recall having known about it.

Q Will you give me your full and total recollection of all conversations you may have had with Mr. Hughes relating to Project Greenland or related project? By that I mean any plans, decisions, program, relative to the manufacture of aircraft or related equipment by Hughes Tool Company or Mr. Hughes.

A Well, that was pretty broad.

Q I meant it to be broad.

A I have already mentioned--

Q Without repeating what you have already testified. I want to have whatever else you may know.

MR. ZELLER: You don't want him to go over the testimony he gave about the Caravelles and the AVRO jetliners?

MR. DAVIS: That does not relate to any

Rummel

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1 manufacturing by Mr. Hughes or the Hughes Tool
2 Company. However, I do not expect the witness to
3 repeat any testimony that he has already given. I
4 want this witness to tell me whether or not he has
5 identified and fully described and given us his
6 full and complete and total recollection of any
7 conversation he had with Mr. Hughes relative to any
8 decision on plans or programs for the manufacture
9 of aircraft or related equipment either by Mr. Hughes
10 or the Tool Company which he has not already given,
11 if any.

12 A Not to say first--

13 MR. ZELLER: I don't agree with you about
14 what his prior testimony--

15 MR. DAVIS: I understand. We will argue
16 in court as to the effect of the testimony we have
17 listened to. Let's get the facts now.

18 A I don't recall Hughes ever being specific as to
19 what he planned to manufacture if he obtained CAB clear-
20 ance.

21 Q That is not my question, Mr. Rummel. I want to
22 know whether or not you have now given us your full,
23 total and complete recollection of any conversation that
24 you had with Mr. Hughes on the subject I have described.
25

Rummel

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2 A That's all I seem to recall now. I will be glad
3 to offer more if I think of it.

4 Q Now my question to you is do you know of anyone
5 else at TWA or associated with TWA who you believe has
6 any information on the same subject matter which you have
7 not fully or completely disclosed.

8 A Well, I just don't know.

9 Q You don't know of anyone else?

10 A As far as I know, I have disclosed it all. There
11 were times when Rourke knew of certain phases of some pro-
12 jects.

13 Q Which projects are you referring to?

14 A Well, the advanced AVRO jet. I don't recall Russ
15 being involved in the Project Greenland. I think the
16 timing of the AVRO project was about--was somewhat coincident
17 with the timing of this application, but I do not recall
18 that ever being tied in together during Hughes' conversa-
19 tion to me. I would have to say as far as I know others
20 in TWA did not know the Project Greenland, or let me say,
21 if they did, I don't believe they got it from me.

22 Q It is correct, then, that you don't know of anyone
23 else who has any information whatever with respect to
24 this Project Greenland or any other intentions or efforts
25 of Mr. Hughes or the Tool Company to manufacture aircraft

1 MR. ZELLER: Your question relates to people
2 in TWA, I take it, as the preceding question did?

3 MR. DAVIS: That is what it was, people in
4 TWA or associated with TWA.

5 A No, as far as I know, I have named those I can
6 recall that were involved in the part of it that I was
7 involved in.

8 Q Other than the people whom you have already identi-
9 fied, do you know of anyone outside of TWA who has, so far
0 as you know, any knowledge or information with respect to
1 the same subject matter?

2 A You mean other than Mr. Hughes and Mr. Cook and
3 the general I mentioned and Mr. Hopper?

4 Q That's correct. The general that you have mention-
5 ed as a General. You can't identify him any better than
6 that, can you?

7 MR. ZELLER: He did. I think he identified
8 him as the Washington representative.

9 THE WITNESS: Well, now, I think he was. This
0 meeting was at his home. He lived out there. I just
1 simply have a lapse of memory at the moment on the
2 man's name.

3 Q Apart from the people that you have mentioned,
4 do you know of anyone outside of TWA?

1
2 A Are you speaking of prior to the filing?

3 Q No, Mr. Rummel, I am not referring to any filing
4 now. The subject I am referring to is any plan or
5 program or implementation of any plan or program relating
6 to the manufacture of aircraft or related equipment by
7 the Hughes Tool Company or Mr. Hughes.

8 A Well, yes, certainly. The reason I asked about
9 filing, as I recall it, it was shortly after the filing
10 that the Los Angeles newspapers carried tremendous headlines
11 announcing Hughes' intention to build advanced jet trans-
12 ports in Florida.

13 Convaix was quite shaken when they read this. We
14 either had just signed or were about to sign the prelimin-
15 ary agreement for the 830.

16 Now, that would have put this in the spring.

17 Q Anything else?

18 A At that point there was no secret about it whatso-
19 ever. Boeing commented to me on it. I don't remember what
20 they said, but they were not pleased with the prospects
21 of another competitor.

22 Q Good. Anything else?

23 A Well, let me say that I don't remember anything
24 specific, but it was a subject of dinner table discussions,
25 I am sure, for some time, and would come up from time to

time. I might be asked was Mr. Hughes serious, because people knew I was working with him.

I don't remember any specific cases, but I know that once it was in the press it wasn't forgotten for a while.

Q What did you tell those people when they inquired as to whether Mr. Hughes was serious? Did you tell them any more than you have told us so far?

A No. I don't think I knew any more, Mr. Davis.

Q You say that Convair appeared to be shaken when this news item appeared relating to Mr. Hughes' intention. Will you describe to me how this came to your attention, who mentioned it to you, what was said, how did they appear to be shaken?

MR. ZELLER: Answer any one of them.

Q I am asking you to describe how Convair manifested to you either their knowledge with respect to Mr. Hughes' plans or their reaction to it. You can answer any one of my prior questions in addition. I want your counsel to be satisfied that you have told us everything you know, Mr. Rummel.

A I will tell you everything I presently recall.

Q I can't ask you to say something you don't recall.

MR. ZELLER: Doubtless you will.

1
2 A I am not sure I can be specific, Mr. Davis. The
3 impression I recall now is that Jack Zevely and others
4 indicated surprise, concern, disappointment, over the
5 announcement.

6 I think they were concerned as to whether Hughes
7 would move forward with the 880 or they wouldn't, or he
8 wouldn't. They were not, as I recall it, a bit backwards
9 about discussing this.

10 It apparently was a complete surprise to them when
11 they read it in the newspapers.

12 Q At that time discussions had progressed to some
13 extent relative to price, terms and what not? Can you
14 give me an idea as to how far negotiations had progressed
15 with Convair with respect to a possible 880 program?

16 A Yes. Well, as I recall it, this was shortly after-
17 or shortly before, I think, the letter of intent type of
18 contract was written, and we intentionally left as many
19 things open as we could, as I believe I explained earlier,
20 particularly in specifications, the maximum extent we
21 could on price.

22 We, as I recall it, negotiated to a much greater
23 extent after that on rebate provisions, and other factors.
24 We had a fairly skimpy skeleton of a form of contract, as
25 I recall it, at the time that this announcement was made.

1 Q Does that reflect now your total recollection as
2 to what transpired insofar as Convair was concerned rela-
3 tive to this announcement?
4

5 A Substantially so. The trouble now is to be
6 specific as to names and incidents that long ago. I am
7 sure it wasn't confined just to Zevely. I am sure others
8 had comments, including probably the technical people.

9 But I can't say at this point exactly what was
10 said by who when.

11 Q Now will you give me your total recollection as to
12 the reaction or what was said by Boeing or any of its rep-
13 resentatives?

14 A ~~As~~ I recall it, Boeing's reaction was a little
15 different from Convair's. It was more in the nature of
16 being incredulous.

17 Q Incredulous?

18 A Yes. I think I got this from talking to George
19 Sandborn, and possibly others.

20 Q What did they say to you that made you feel that
21 they were incredulous?

22 A Gee, I am giving you what I recall is my impres-
23 sion now, Mr. Davis. I don't think I can say exactly
24 what they said that led me to believe that, but I recall
25 having that impression, that they were somewhat shocked,

(Excerpts from ^{DX43, page 1782} Deposition of Robert W. Rummel)

1
2 they found it difficult to believe, they hoped it wasn't
3 so, and I don't think they thought that he would be building
4 much better airplanes. At least, this is the general
5 impression that I got, that it was an incredulous situation.

6 MR. ZELLER: Off the record.

7 (Discussion off the record.)

8 Q Can you tell me what was the state of negotiations
9 with Boeing at or about the time this news was announced?

10 A Well, as I recall it, we had--rather, Hughes had
11 purchased or agreed to buy the 131s, but I can't remember
12 whether the 331 deal had been closed or not. It was
13 about that time, as I recall it.

14 I think Boeing pretty much felt they had it in
15 the bag. That's what I am saying now. I am not sure
16 that is what I might have said then. But I believe they
17 must have at that time.

18 Q You don't recall their saying something to the
19 effect, my goodness, not another competitor in the
20 manufacture of aircraft?

21 MR. ZELLER: In words or substance.

22 A Well, not exactly, no.

23 Q Now do we have a fairly complete identification of
24 what took place in connection with that subject matter?

25 A I think so, Mr. Davis. That is all I can seem to

DX 44, page 1
(Letter of Damon, Dec. 6, 1955)

TRANS WORLD AIRLINES, INC.

December 6, 1955

TV - 1000 (9)

390

To the Directors

Gentlemen:

In 1955, TWA was granted the right to serve four new domestic routes in-
volving new east-west service to five major U. S. cities as follows:

1. New York to Cleveland
2. New York to Detroit to Chicago
3. Chicago to Denver to Los Angeles and/or San Francisco
4. New York to Washington to Tulsa to Oklahoma City to Los Angeles
and San Francisco

These new routes reflect not only excellent preparation by the TWA staff
and excellent presentation by TWA counsel before the Civil Aeronautics Board,
but they also reflect the opinion of the Civil Aeronautics Board that with
domestic trunk airlines now out of the subsidy classification, another
wave of added competition will be good for the domestic trunk airline industry.

This philosophy on the part of the Civil Aeronautics Board has applied
not only to TWA but also to many of the other airlines, with the net result
that TWA is faced with further substantial competition on routes and in cities
where its competition previously has been limited or nonexistent.

For example, American Airlines has been put into direct competition now
with TWA between Chicago and San Francisco on a non-stop basis, where the
only previous competition was United Airlines. American Airlines has also
been put into competition with us between Pittsburgh and New York where pre-
viously our only competition was Capital Airlines. American Airlines can now
fly Dayton to New York, where we had no competition before, and also Colum-
bia to New York where we had no competition before.

if XX 282

DX 44, page 2
(Letter of Damon, Dec. 6, 1955) - 2 -

United Airlines will now be direct competition with TWA from Los Angeles to Kansas City, where we have never had any scheduled competition before, and with no obligation to serve any intermediate communities between these points, which obligation we still retain. United Airlines will also be competition between Kansas City and some point east of Chicago, so that they will become competition both east and west in Kansas City.

Continental Airlines will become direct competition with ourselves between Kansas City and Chicago where only Braniff existed as competition before.

It is possible, even probable, under the present philosophy of the Board, that in current cases Eastern Airlines and/or American Airlines will be given non-stop privileges from St. Louis to New York, where we now have no competition. There are other examples in the route cases already adjudicated and also in route cases now pending where, if the present philosophy of the Board continues (and I expect it will for a while), substantial additional competition in the present domestic trunk airline route structure will be established, so that the domestic trunk airline business will be much more competitive in the future than in the past. This will be a good thing for the able competitors and a bad thing for the less able competitors.

In the past seven years, TWA has earned and retained after taxes approximately \$50,000,000 and has altered its equity-to-debt ratio from approximately one-sixth to double. But during this same period, TWA has not kept pace with the total growth of the domestic business, nor with the growth of its leading domestic competitors, American Airlines and United Airlines.

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ter of Damcn, Dec. 6, 1955) - 3 -

BIG-3 TRANSCONTINENTAL AIRLINES (TWA DOMESTIC ONLY)

OPERATING REVENUES

	1948 %	1953 %	1955 %
AAL	37.7	40.6	40.1
UAL	34.9	32.6	35.5
TWA	27.4	26.8	24.4
Total	100.0%	100.0%	100.0%

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592

Admittedly our financial and other dilemmas prior to 1949 left us in a weakened position to accept properly all the opportunities in the period of dynamic growth during the past seven years. However, with the philosophy trend toward increased competition, and starting from here, the future should be a source of serious concern to us in order that we do not drift backwards through the field of airlines to a mediocre position among the also-rans.

The problem is further complicated at this time with the advent of substantial orders for very expensive high-performance jet airplanes already on order by our two leading competitors, American Airlines and United Airlines, and others, which will begin to face us competitively perhaps in 1959 and surely by 1960 and 1961. At the present time, jet airplanes have been ordered by American Airlines, United Airlines, National Airlines and Braniff Airways.

In a recent conversation with Captain Rickenbacker, he indicated that Eastern Airlines would be ordering theirs probably this month, which will leave TWA in a position of splendid isolation unless we make a similar move rather promptly.

The same condition applies to the shorter haul somewhat smaller and slower turbo-prop airplanes on which the present outstanding orders are 60 by American Airlines and 40 by Eastern Airlines, with minor quantities on order or in active negotiation by other airlines.

I do not think that the manufacturers' promised delivery dates currently quoted for licensed Boeing 707's to begin delivery in December 1958; or for licensed Douglas DC-8's to begin delivery in the summer of 1959; or for Lockheed Electras to begin delivery in 1958 will be met. After 19 years' experience building airplanes and 18 years' operating airplanes on airlines, I have found that unforeseen conditions of one nature or another generally delay expected deliveries and operations, particularly when such delivery

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(Letter of Damon, Dec. 6, 1955)

dates are given years in advance. Nevertheless, I do think that TWA may well face serious competition from the Lockheed Electras in 1959 and from both Boeing 707's and Douglas DC-8's in 1960.

At that time every airplane which TWA now owns or has on order or option will be either totally obsolete or heavily outclassed in speed, comfort, passenger acceptability, and economics on competitive routes. And by 1961, unless we have acquired practically complete replacement of our fleet and acquired for our domestic operation something on the order of 30 long-range jets and 50 Lockheed Electras or equivalent, we shall find that we have drifted backwards in the field from a position of fourth place as today to sixth, seventh or eighth place.

I realize the financial requirements of a fleet of this sort will run into money on the order of \$250,000,000, and that our earnings in the intervening period plus our depreciation for the same period on our domestic routes will, in the next six years, probably provide only about 60 per cent of that amount even with reasonable good continuing business conditions. I expect that the other hundred million can be financed in accordance with our present manner by mortgages or other means.

INTERNATIONAL

On our international routes the problem is also important but fortunately not as pressing because other governments do not currently share the enthusiasm of our Civil Aeronautics Board for added competition at this time. But, if we are to maintain our position on the main trans-Atlantic lifeline into the important gateway points of London, Frankfurt, Paris and Rome, we must recognize the fact that by 1960, we will be facing heavy competition from Pan American with fast long-range jets. This challenge has already been

DX 44, page 6
(Letter of Damon, Dec. 6, 1955)

accepted by Scandinavian Airlines and by KLM, both of whom have ordered fast, long-range American-built jets, and by others, including the British who will probably follow.

Whether by 1960 the international airline business will have developed to a point where, for competitive or traffic reasons, we must supply long-range jet equipment beyond the gateway points I have mentioned above, I do not know. But, to provide truly competitive service and keep our place in the sun at the important gateway enumerated will require a minimum of 10 additional long-range jets at a total expenditure which I would estimate to be \$60,000,000 of which, barring world-unsettling conditions, I would estimate profits and depreciation in the meantime would provide some \$35,000,000 of cash, with the remainder necessary to be financed by debt or otherwise.

In our international routes picture, the acquisition of modern equipment is particularly important because all our international routes are on a temporary basis expiring in 1959 except our routes from stateside points to Paris and Rome. Hearings to extend the temporary routes will probably begin in 1958 and extend through the early part of 1959 by which time the full blast of the jet plane propaganda of our competitors will be sweeping the country and will be an important psychological factor in the decision of the Civil Aeronautics Board as to our "fitness, willingness and ability" as defined in the Civil Aeronautics Act, to compete in international routes. Not only do we have no chance of extending our international routes around the world but we may even be denied further operation of many points we now serve under temporary certificates, including London and Frankfurt, unless our plans are competitive equipmentwise at the time of the hearing and Civil Aeronautics Board decision.

III 44, page 7
(Letter of Damon, Dec. 6, 1955) - 7 -

to keep TWA in its present place in the field is slightly over \$300,000,000, with approximately \$125,000,000 of that amount to be financed in the next five to six years.

OTHER CONSIDERATIONS

The introduction of the jets is not merely a problem of supplying more new expensive airplanes. It is probable that between now and the time of introduction, many of the runways on most of the airports will have to be strengthened to take the gross weights involved. Some of the runways will have to be lengthened, and municipalities have shown an increasing reluctance to vote bond issues or taxes for this purpose. It is even possible that the airlines themselves will be required to do some of the financing, perhaps on a prepaid rent basis.

Perhaps even more important, the public relations of the airlines in the vicinity of airports particularly in big cities where the jet airplanes will first be used, have deteriorated heavily in the past few years both from a noise nuisance factor (which the jets will make substantially worse) and from a potential accident hazard to surrounding communities on the ground.

While I think it is inconceivable that airplanes will be outlawed from any existing airports or that ultimately jet airplanes will not be allowed on some from which they are currently barred (Idlewild as an example), the previous glamour of airports in communities is already somewhat tarnished and currently becoming more so.

There are many other problems in connection with the use of jet airplanes, such as airway traffic patterns, airport holding stacks, high altitude operation and upper air meteorology.

The jet airplanes also, because of their inherently larger size, will

require a longer terminal time for loading and unloading, and the current delayed baggage delivery nuisance on arrival will not be simplified.

In other words, the larger size of equipment necessary for oceanic success makes for terminal time losses whereby passengers have to check in earlier and take more time claiming their baggage after arrival.

Not all the airports currently served by TWA will accommodate either the long-range jets or the Lockheed Electra type turbo-props. We will therefore probably have to keep a residual number of our current Martin airplanes for service at airports such as Albany, Binghamton, Wilkes-Barre, Williamsport, Allentown-Bothlehem-Easton, Reading, Harrisburg, Wheeling, Toledo, Fort Wayne, South Bend, Terre Haute, Peoria and Santa Fe. This is a large array of minor cities but we are fortunate that in the past few years we have been able to omit service (generally transferred to feeder airlines) at approximately a dozen or more "headachy" points.

One other thought in this connection concerns the relative earning power of airplanes. In the nine months ended September 30th, on an evenly allocated overhead basis, only our domestic and international Constellation exclusively tourist flights had actually shown any net income. And in the nine months those 45 airplanes earned over \$20,000,000 net operating income despite the fact that the company itself earned only \$10,830,000 net operating income in the same period.

There are many reasons for the loss of revenue after full allocated overhead on the other types of equipment. For example, our 50 Martin airplanes showed a loss of \$2,300,000 due to the type of short-haul service which we are required to perform and in which service we place them. Our twice-a-week Ambassador flights to London and Paris respectively lost half a million, and have always been accepted by us as loss loaders. Our DC-4 cargo flights

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(Letter of Damon, Dec. 6, 1955)

lost nearly \$600,000 based only upon the revenue which they carry and with no charge to ourselves for all the non-revenue company equipment which they haul, etc., etc.

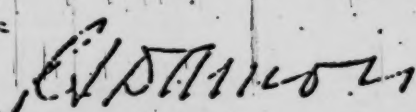
Even our first class Constellations lost money in this period, partly due to the type of intermediate city domestic service in which we place them; and our Super Constellations lost money because they are so heavily outclassed in speed and passenger preference in the competitive services we fly against American and United. In the case of the Super-G's, I think the loss figure will be eliminated as we step up the utilization per plane per day now that the airplanes are shaken down and now that the forward compartment is being used for tourist service on all flights.

Two Important facts remain:

1. Currently only our domestic and international Constellation tourist service makes us money.
2. Any airline which does not have competitive long-range jets (similar to the Boeing 707 or Douglas DC-8) and shorter range modern turbo-props (similar to the Lockheed Electra) by 1960 or 1961 will be practically out of business soon thereafter.

RECOMMENDATION

I recommend that the proper officers of this company be authorized to bring to the Board a specific recommendation for equipment and financing at the January 1956 or earliest possible Directors' Meeting thereafter; or, if the Directors prefer, that we revive the Equipment and Finance Committee of the Directors to accomplish the same purpose.


R. S. Damon

DX 45, page 1
(Letter-Leslie to Dietrich, Dec. 19, 1955)

TRANS WORLD AIRLINES, Inc.

380 Madison Avenue
New York 17, New York, U.S.A.

December 19, 1955

A V LESLIE
VICE PRESIDENT, FINANCE
AND TREASURER

Dear Noah:

You have requested my views as to what TWA's near-term financial abilities may be, having regard to the options which it intends to execute taking over airplanes now under firm order by the Hughes Tool Company and against which the latter has made interim payments required by the manufacturer.

You have also requested my comment on TWA's abilities to contract for equipment of more advanced characteristics such as have been ordered by other major air lines with which we compete.

Existing equipment commitments which we propose to take over from the Hughes Tool Company are, in round figures, as follows:

(Millions)

2 1049G Constellations	\$15.2
Company Furnished Equipment	1.0
(Delivery dates June - September 1956)	\$16.2
25 1649 Constellations	\$58.0
Equipment Spares	11.0
Company Furnished Equipment	3.0
(Delivery dates April - September 1957)	\$72.0
Grand Total	<u>\$88.2</u>

There may be escalation involved and it is possible, and for planning purposes should be assumed, that the total program aggregates 90 million.

Mr. Noah Dietrich

Page 2

December 19, 1955

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1. On April 1, 1956 (the beginning of our next budget period), working cash will be \$12.0
2. Debt on that date will be 40.0
3. Net worth will be 73.0
4. Net Income in terms of Gross Revenues will aggregate the level presently projected for the 12 months ended September 30, 1956 2.50%
5. That equipment requirements can be funded as to 60% by secured notes running off in 5 years (a pattern for which we have precedence in the past).
6. That at any given time TWA requires working cash equal to three weeks cash operating expenses.

(Millions)

	<u>3/1/56</u>	<u>1/1/57</u>	<u>1/1/58</u>
Beginning Cash	\$12.0	\$ 9.2	\$ 3.5
<u>Increase Factors</u>			
Net Income	*\$ 8.0 (9 mo.)	\$ 7.0	\$ 7.8
Depreciation	18.7 (9 mo.)	36.0	35.0
Borrowings - 60% of A/C CFE and Spares	9.7	43.2	
	<u>\$ 36.4</u>	<u>\$86.2</u>	<u>\$42.8</u>
<u>Cash Requirements</u>			
Property & Equipment ex A/C	\$23.0	\$13.0	\$13.0
Flight Equipment	16.2	72.0	
Debt Repayment Equitable		5.0	5.0
8 1049G's		1.9	1.9
25 1649's			8.6
	<u>\$39.2</u>	<u>\$91.9</u>	<u>\$28.5</u>
Cash Gain	(\$ 2.8)	(\$ 5.7)	\$14.3
	<u>12/31/56</u>	<u>12/31/57</u>	<u>12/31/58</u>
Ending Cash	\$ 9.2	\$ 3.5	\$17.8
Working Cash Deficiency	1.5	13.2	0.6 excess

Mr. Noah Dietrich

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December 19, 1955 77

Review of the preceding table indicates that the cash building ability of the company is such that it will be unable to carry the presently committed program with normal borrowings. This is so since, during a full two-year period, it will be deficient in its working cash balance to a maximum sum of \$13.2 million under minimum requirements, this occurring about the end of 1957.

It is evident that TWA can handle the purchase of the eight 1049G's without difficulty, given 60% funding of the purchase price.

As to the 1649's, the Tool Company has made a payment to the manufacturer of 25% of the roundly \$58 million cost of the 25 planes (ex spares and company furnished equipment), a sum of approximately \$17 million.

Should the Tool Company be willing to continue to finance this purchase by TWA to the extent of this payment on a subordinated basis, it appears that TWA could finance the remaining portion through 60% funding plus cash generation. I would expect that arrangements could be made with the loaning agency which would allow us to pay the Tool Company against this receivable during the life of the borrowing to the extent that general fund cash exceeded reasonable working requirements. A forecast of cash on the foregoing basis is shown:

	(Millions)	3/1/56	1/1/57	1/1/58
Beginning Cash		\$12.0	\$ 9.2	\$10.3
<u>Increase Factors</u>				
Net Income		*\$ 8.0(9 mo.)	\$ 7.0	\$ 7.8
Depreciation		18.7(9 mo.)	36.0	35.0
Borrowings 60% of A/C CFE & spares	9.7		33.0	
HTCo subordinate note			17.0	
		\$36.4	\$93.0	\$42.8
<u>Cash Requirements</u>				
Property & equipment ex A/C		\$23.0	\$13.0	\$13.0
Flight Equipment		16.2	72.0	
Debt Repayment Equitable			5.0	5.0
8 1049G's			1.9	1.9
25 1649's				6.6
		\$39.2	\$91.9	\$26.5
Cash Gain		(\$ 2.8)	\$ 1.1	\$16.3
		12/31/56	12/31/57	12/31/58
Ending Cash		\$ 9.2	\$10.3	\$26.6
Deficiency in Cash		1.5	6.4	9.4 excess

DX 45, page 4
(Letter-Leslie to Dietrich, Dec. 19, 1955)

Mr. Noah Dietrich

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December 19, 1955

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I believe the cash position indicated by the table would allow us to deal successfully with a financing agency for the amounts indicated and further give us hope that payment in some measure might be made to the Tool Company although this would be dependent upon a continuously profitable operation through 1958.

To your final question, the ability to finance additional equipment, we know that the manufacturer would require a down payment in the order of 25% and progress payments totaling at least another 25% during the succeeding 18 months from the signing of the contract.

However modest TWA's views might be the figures indicate it could not, even with Tool Company assistance to the extent indicated in preceding paragraphs, generate any excess cash until 1959 if we assume payment of the Tool Company note during 1958 (which is optimistic). Without laboring the point, I can only say, if TWA is to have additional aircraft requiring near-term cash, the Tool Company must accept the burden for a period extending at least beyond 1958.

Kindest personal regards,


A. V. Leslie

Mr. Noah Dietrich
Hughes Tool Company
7000 Romaine Street
Hollywood 38, California

DX 46, page 1
(Letter-Dietrich to Ayers, Dec. 21, 1955)

HUGHES TOOL COMPANY

HOUSTON, TEXAS

December 21, 1955

WEST COAST EXECUTIVE OFFICE
7000 ROMAINE STREET
HOLLYWOOD 23, CALIF.

Mr. Fred W. Ayers
Senior Vice President
Hughes Tool Company
P.O. Box 2539
Houston 1, Texas

Dear Fred:

Re: Equipment Program TWA

For several years it has been assumed in the air transport industry that jet aircraft would play a prominent role when their design reached the stage of development as to be commercially feasible. Early this year TWA engineers and representatives of the Tool Company concluded that the time was ripe to commence negotiations for the design and manufacture of jet airplanes which would suit the peculiar requirements of TWA. Because of the tremendous cost of newly designed jet aircraft it was a foregone conclusion that the Tool Company would have to lend substantial financial assistance to TWA. The exact form and extent of such support being left open, pending final determination as to the requirements and the existing financial capabilities of TWA itself.

Under such approach early this year representatives of the Tool Company surveyed the various potential manufacturers and then opened extensive negotiations with Convair for the design and manufacture of 30 turbo-jet transports of a design which would compete with both the Boeing 707 or Douglas DC-8.

These negotiations with Convair proceeded to the point of a detailed contract with accompanying specifications. The total purchase price in round figures for the 30 planes was \$150,000,000. Recently, however, before the final draft of the contract could be presented to the Tool Company Board for approval Convair terminated the negotiations (presumably because of uncertainties as to performance and conflicting military commitments). If Convair is now able to obtain contracts for certain military aircraft, however, it will reopen negotiations and a final decision on such military contracts will be reached by February 1, 1956.

In the meanwhile our competitors, and many non-competing airlines, have placed large orders for jets with the other leading aircraft manufacturers. This is shown by Bob Rumel's memorandum to Collings, dated December 9, 1955, a copy of which you have previously been furnished. These manufacturers have few favorable delivery positions left. As insurance against the possibility that the contract with Convair will fail to materialize, representatives of the Company are presently discussing possible agreements with one

HUGHES TOOL CO

DX 46, page 2

EXECUTIVE OFFICES

(Letter-Dietrich to Ayers, Dec. 21, 1955)

Mr. Fred W. Ayers

-2-

December 21, 1955

C large and two smaller aircraft manufacturers.

The large scale purchases by other airlines undoubtedly prompted Ralph Damon's report, dated December 6, 1955, which he submitted to the TWA directors at their meeting of December 13, 1955. You will recall Damon's emphatic conclusion that "any airline which does not have competitive long-range jets (similar to the Boeing 707 or Douglas DC-8) and shorter range modern turbo-prop (similar to the Lockheed Electra) by 1960 or 1961 will be practically out of business soon thereafter".

It was his specific recommendation that TWA acquire for its domestic operation alone "something on the order of 30 long-range jets and 50 Lockheed Electras or equivalent". He estimated the financial requirements of a fleet of this sort as being on the order of \$250,000,000. For international use he suggested the acquisition of a minimum of 10 additional long-range jets at a total expenditure of approximately \$60,000,000. Damon's report dealt primarily with equipment requirements and did not undertake a detailed analysis of TWA's financial capabilities to meet such requirements. Feeling that such an analysis was vitally necessary I requested Vic Leslie to furnish me with his own views on the matter; and a copy of his report is enclosed herewith.

From Vic Leslie's report I would draw the following conclusions:

- a. From independent lending sources TWA can finance the entire purchase under ID-147 of the eight 10493 airplanes presently contracted for, including the repayment to Hughes Tool Company of its down payment in the amount of \$3,800,000.
- b. From independent lending sources TWA can also finance the purchase under ID-138 of the twenty-five 1649 airplanes presently contracted for, but only provided that it not be required in 1957 to reimburse Hughes Tool Company for its down payment in the amount of approximately \$17,000,000 (paid in December 1954).
- c. Under the financial arrangements discussed in (a) and (b) above TWA will have a working cash deficiency until 1958.
- d. TWA cannot finance, either from its own cash or from independent lending sources, any down payments or progress payments for additional equipment commitments in 1956, 1957 or 1958.
- e. In no event can TWA, on its own, undertake the large scale jet program now under negotiation.

Because of the speculative course of jet airplane design and production,

(Letter-Dietrich to Ayers, Dec. 21, 1955)

Mr. Fred W. Ayers

-3-

December 21, 1955

substantial progress payments, in addition to the customary down payment, will have to be made if favorable deliveries are to be obtained from any manufacturer. Negotiations with the other manufacturers have suggested that for planning purposes we must assume a down payment of approximately \$37,500,000 with a progress payment within 12 months of an additional \$37,500,000. These calculations assume a total jet commitment, exclusive of G.F.E. and spares, of \$150,000,000. In order to obtain a favorable contract, however, it may be necessary to make an initial purchase in even a larger amount, possibly \$175,000,000 or \$200,000,000, in which event the down payment and progress payments would be proportionately increased.

The increasing magnitude of TWA's jet requirements, the known inability of TWA to finance them alone and the recent industry developments which demand an early commitment indicate to me that the Board should now formally approve a program of financial assistance to TWA which contemplates direct commitment by the Tool Company to contract for the jet aircraft required by TWA and payment by Tool Company of the down payment and progress payments called for by such contract. It is also suggested that the Board take such action as will enable the appropriate Company officers to postpone payment by TWA of the \$17,000,000 due Tool Company in 1957. Board action relating to reimbursement of the payments to be made by the Company under the jet contract and to financing of the balance of the contract price can be taken at such time as the Board considers the formal contract negotiated by the Company's representatives.

The Company's representatives have also commenced negotiations for the purchase of turbo-jet equipment but the Board need not take any action until a definite contract has been proposed.

Yours very truly,

*W. A. Dietrich*WDietrich:hb
Enc.

Boeing-Toolco Purchase Agreement - 8 B-131s, 1/10/56)

January 6, 1956

Hughes Tool Company
2200 Gulf Building
Houston, Texas

Gentlemen:

We hereby offer to sell to you eight jet transport aircraft known as the Boeing Model 707-120 and described in Boeing Detail Specification B-16787 dated October 21, 1955 and revised November 9, 1955, on the following terms and conditions:

- (a) Deliveries of such eight Model 707-120 aircraft will be made in accordance with the following schedule:

<u>Month</u>	<u>Quantity</u>
April 1959	1
May 1959	2
June 1959	2
July 1959	2
August 1959	1

and we agree that prior to the month in which the first of such aircraft is delivered to you we will not have delivered to other commercial customers, more than 12 Model 707 type aircraft.

- (b) The basic price for each of such eight Model 707-120 aircraft fully equipped in accordance with such Detail Specification and for which an airworthiness certificate is to be in effect upon delivery, shall be \$14,200,000, which shall be subject to an increase of \$40,000 per aircraft to cover the cost of JT3C-4 engines in lieu of JT3E-2 engines and of either \$14,000, in the case of first class arrangement, or \$17,000 in the case of a combined first class and tourist arrangement, per aircraft to cover the cost of special customer interior features. Such price also shall be subject to adjustment for changes in the Detail Specification, including any changes you select from the list set forth in Exhibit A attached to this letter agreement which are included in the Detail Specification but have not been included in such basic price and to escalation as to

Hughes Tool Company
January 6, 1956

Page Two

the cost to us of the auto pilot included in such price at \$27,500 but without escalation as to the cost of any other item. We represent that the basic price of \$4,200,000 and the other price elements set out in the foregoing two sentences are as favorable to you as the basis on which we have entered into contracts with any other customer and that our upward and downward basic price adjustments on account of specification changes you may desire will be no less favorable to you than to other customers.

(c) Payment for such eight aircraft shall be made as follows:

<u>Due Date of Payment</u>	<u>Percentage of Aggregate Basic Aircraft Price</u>
10 days after date of this agreement	5%
July 1, 1956	2%
October 1, 1956	2%
January 1, 1957	3%
April 1, 1957	3%
July 1, 1957	3%
October 1, 1957	3%
January 1, 1958	3%
April 1, 1958	3%
July 1, 1958	3%
October 1, 1958	3%

The balance of the payment in respect to each aircraft shall be made upon delivery.

All such payments shall be made in lawful money of the United States, to be unconditionally deposited to our account in a bank in the United States to be designated by us.

(d) Each of the parties hereto agrees to proceed immediately to determine the final Detail Specification for such eight Model 707-120 aircraft, and upon completion of such Detail Specification to enter into a definitive Purchase Agreement in a form substantially similar to the form of Purchase Agreement which we have previously furnished you marked "Proof of December 7, 1955." It is understood and agreed that neither the Dosing Detail Specification referred to in the first paragraph of this letter agreement nor the form of the purchase agreement marked "Proof of December 7, 1955" is completed or perfected, and the parties mutually desire and consider necessary that they be completed and perfected as soon as possible. We agree to make such

Hughes Tool Company
January 6, 1956

Page Three

reasonable changes in the Specification prior to and during the manufacture of the aircraft as you desire with such price increase or decrease and effect upon weight and performance and time of delivery as may reasonably be incidental thereto, to give due and proper consideration to your desires for changes in the form of purchase agreement, and to offer to you alternate purchase agreement provisions which we offer generally to other customers. Such Purchase Agreement will incorporate by reference such Detail Specification, and it will contain the above mentioned matters together with such other terms and conditions not inconsistent therewith as the parties may agree upon.

It is understood that the definitive Purchase Agreement will involve implementation of this letter agreement in such manner as to leave either party free to request changes in the basic price for each of the type aircraft mentioned herein based on terms and conditions to be incorporated in such Purchase Agreement which are new or different from any terms and conditions expressly agreed to herein.

This letter agreement is understood to be subject to the conditions subsequent (a) that you shall have until 5 p.m. PST February 10, 1956, or such later date as may be mutually agreed upon, to negotiate with United Aircraft Corporation warranty provisions and a service policy satisfactory to you to be applicable to the engines to be installed on the aircraft and (b) that a definitive purchase agreement superseding this letter agreement will be executed by the parties hereto on or before 5 p.m. PST February 15, 1956 or such later date as may be mutually agreed upon. In the event (1) you are unable to negotiate such warranty provisions and service policy by 5 p.m. PST February 10, 1956 or an agreed extended date and you elect for that reason alone to cancel this letter agreement and give us written notice of such cancellation on or before 5 p.m. PST February 10, 1956, or an agreed extended date, or (2) such definitive purchase agreement is not so executed by 5 p.m. PST February 15, 1956, or an agreed extended date, then all obligations of both of the parties hereto shall cease and terminate as of the applicable date or extended date, except that payments hereunder will be forthwith refunded.

2/24/56
2/24/56
2/24/56
H. H. Hughes
2/24/56

It is further understood and agreed that the rights of the Hughes Tool Company under this letter agreement or any definitive Purchase Agreement which may be entered into by the parties hereto superseding such letter agreement may be assigned to Trans World Airlines, Inc.

If the foregoing is satisfactory to you and you sign the carbon copy of

Hughes Tool Company
January 6, 1956


Page Four

this letter enclosed for that purpose on or before 5 p.m. PST January 14, 1956 and return such copy to us, this letter will constitute a binding agreement between us.

Very truly yours,

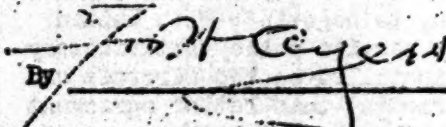
BOEING AIRPLANE COMPANY

By


J. B. Connolly, Director of
Contract AdministrationAccepted this 10th day of January 1956

HUGHES TOOL COMPANY

By



(Boeing-Toolco Purchase Agreement - 8 B-131s, 1/10/56)

EXHIBIT A

The following Master Changes have been incorporated in the Model 707-120 Specification, D-16787, and the sales prices noted are not included in the basic price (\$4,200,000) of the airplane:

<u>Master Change No.</u>	<u>Description</u>	<u>Price/airplane</u>
1	Addition of 3 Bladder Cells in Wing Center Section (1,970 Gallons)	\$ 8,454
9	Addition of Totalizing Fuel Quantity Indicating System	2,480
15	Installation of Solcal	905
18	Increased Escape Slide (non-inflatable type) Stowage Provisions	746
30	Revision of Cabin Water Systems to Provide Both Hot and Cold Water Service	1,670
40	Installation of Drip Sticks in Tank Doors	3,007
41	Installation of Sundstrand Constant Speed Drive Unit Disconnect Clutch (3-Drive System)	2,820 ✓
65	Installation of De-icing System Manual Control	2,480 ✓
121A	Relocation and Revision of Radio Rack Without Access Hatch	1,500 ✓
<u>263</u>	4 Point Underwing Refueling System	3,598 ?
	TOTAL	<u>\$27,660</u>

BOEING AIRPLANE COMPANY

SEATTLE 14, WASHINGTON

January 6, 1956

TELEPHONE: MOHAWK 3333

IN REPLY REFER TO

Hughes Tool Company
2200 Gulf Building
Houston, Texas

W. H. Connelly

Gentlemen:

Consistent with our discussions, we have furnished you copies of our detail specification and other technical data concerning the Model 707-320 with a view toward your possible purchase of such aircraft. In furtherance of this goal, we are pleased to offer to sell such number of these aircraft between 22 and 30 as you may wish to purchase, on the following basis:

1. Basic specification: Boeing Detail Specification D17434 dated November 15, 1955, revised December 6, 1955.
2. Basic Price: \$5,150,000 per aircraft, subject to adjustment for changes in detail specification and to escalation as to our cost of the auto pilot which has been included in the price at \$27,500, but not subject to escalation as to the cost of any other item. The above price is also subject to reduction of \$51,000 per aircraft, in the event you elect to furnish passenger seats.
3. Delivery Schedule: As set out in Attachment A.
4. Payment and other contractual provisions: Substantially similar to those contemplated with respect to the 8 Boeing Model 707-120 aircraft covered by letter agreement of even date.

If you should desire to order additional Model 707-120 aircraft we can furnish them at the price and terms and conditions set forth in letter agreement of even date for delivery as follows: One each month November 1959 through April 1960 provided you do not order any Model 707-320 aircraft for delivery in that month and one each month May and June 1960 and two each month thereafter even though you order Model 707-320 aircraft for delivery in those months in accordance with the schedule in Attachment A.

This offer is open for acceptance until 5 p.m. PST January 20, 1956.

Very truly yours,

BOEING AIRPLANE COMPANY

By

W. H. Connelly
W. H. Connelly, Director of
Contract Administration

ATTACHMENT A

Delivery Schedule Model 707-320 Aircraft

<u>Month</u>	<u>Quantity</u>
November 1959	1
December 1959	1
January 1960	1
February 1960	1
March 1960	1
April 1960	1
May 1960	2
June 1960	1
July 1960	1
August 1960	2
2 per month thereafter to completion	

(Transcript of Telephone Conversation-Rummel & Connelly-12/20/57)

~~CONFIDENTIAL~~
~~ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED~~
~~DATE 12-20-81 BY SP-7 EJS~~

...

Connelly: . . . schedules involved here depends on whether we hit a target schedule or contract schedule. Ah, American will receive its first airplane (blank) --- dated airplane within a period of not less than sixty days prior to the month in which the next domestic customer receives aircraft.

Rummel: In other words they would deliver -- they would receive and you've agreed to deliver one NC airplane sixty days prior to

Connelly: No, no. I'm mentioning certificated airplanes.

Rummel: One NC airplane.

Connelly: No. They get an NC airplane earlier than that, Bob. Just the same as you do.

Rummel: Wait a minute. They get an NX earlier.

Connelly: Well, then, all right. It's an uncertificated airplane.

Rummel: Yeh. But your -- your arrangement relates to certificated rather than uncertificated aircraft.

Connelly: That's right.

Rummel: Is that what you're saying?

Connelly: That's right.

Rummel: Well, that what I say so if I understand what you're saying, you're saying that you have an agreement with American which requires you to deliver one NC -- that's the licensed airplane -- sixty days prior to delivering the first NC airplane to other domestic operators. Is that right?

Connelly: No. I don't you -- you have to go back to the wording I gave you.

Rummel: Well, would you give it to me again.

Connelly: Yeah. I say we have represented to American that we will deliver six certificated airplanes -- let's forget the uncertificated airplanes -- that we will deliver six certificated airplanes within a period of not less than sixty days prior to the month in which the next customer receives certificated airplanes.

(Transcript of Telephone Conversation-Rummel & Connelly-12/20/57)

Rummel: Well, how do you interpret that then? Does that mean that you'd meet the obligation if you deliver American one airplane sixty days before our first?

Connelly: No.

Rummel: Well, you're not saying you have to deliver six airplanes

Connelly: We have to deliver six certificated airplanes to them prior to the month in which we deliver any airplane to any other domestic customer.

Rummel: Well, that was certainly never explained to me. In fact I never heard the sixty days until now that I can remember.

Connelly: Well, it's not unreasonable to expect the first customer in, Bob, to -- all Howard wanted was the first thirty-three airplanes. So I think this is a very reasonable insistence on the part of American -- far less drastic than Howard was attempting to establish when he was first up at bat.

Rummel: Well, it's probably far less drastic than American would have established too.

Connelly: Well, ah

Rummel: But that's neither here nor there. The fact is that

Connelly: I mean -- ah -- let's look at it this way, Bob. We never made any representations on the 12C airplane and it was known at that time that both Pan American and American had signed up -- that there would be any possibility of TWA equalizing the situation with American. It just wasn't in the cards. We had to give them some preference by reason of having made the program firm, and, as I say, to be perfectly honest it's a very reasonable position for them as it stands now and certainly no more than we would agree to, Bob, when you compare it with what Howard was asking for when he was first up at bat. He said he'll take the first thirty-three airplanes or nothing, which would have put us out of business -- bang! I mean I just give you that as a

Rummel: Well, did you offer Howard a two-months lead over American?

Connelly: Well, I think he made the proposal himself and of course at that time, as you well know, there was considerable dickering with Convair.

Rummel: Well, I know there was.

Connelly: The point is

Rummel: Well, we hadn't purchased Convair at that time

Connelly: What?

Rummel: We didn't buy from Convair at that time. We didn't buy from Convair until long after we had purchased both models at Boeing.

(Transcript of Telephone Conversation-Rummel & Connelly-12/20/57)

Connelly: Well, all I can say is

Rummel: If you remember that -- in fact I came to Boeing and wanted a -- the small airplane developed. Maybe you don't remember that but I sure did, and the one you came up with wasn't very good at that time -- that was

Connelly: We -- we were in contact with Howard at -- well, during the course of negotiations with Pan American and offered delivery schedules and at that time he made the proposal that he'd buy the first thirty-three airplanes, period. Subsequently, ah -- well you appreciate the fact it's not easy to make contact there -- and ah -- well the situation pretty well died out until the big airplane came into being, Bob.

Rummel: Well, Howard says that he has this understanding on the situation. I think what we ought to do -- what I'd like to do is to sit down and become real clear -- probably you're right -- we can't do it fully by telephone.

Connelly: No. I'm afraid this is an unsatisfactory way to do it, Bob, but I think we can convince you, Bob, that what we have offered and what we are prepared to offer is a very reasonable arrangement.

Rummel: Yeh. Well, I don't -- I just don't understand even now -- ah, this will be a great shock to Howard to know that -- (?) understand you had this prior agreement with them, but I don't understand how you can be led into the position that if you offer -- well, let me go back. When I was up there sometime ago I said we would like to have some more early positions -- at least I think we'd like to have them -- what can you offer so we can really give it serious consideration. And we wanted to offer -- the objective was to, as I explained it, was to be able to more nearly start service at the time American Airlines were starting or to start with them simul -- start at the same time. And I was told well you didn't have positions available that early, but you'd see what you had available, which you then did and you made them available on the basis that we would -- if we took one early position, then to make it attractive to you, we'd take one later position, or a one for one ratio.

Connelly: Yeh.

Rummel: And, so what you're saying is that in order to give us early positions, we have to buy a later position, but then I was told last week that if we take the six positions you offered that naturally American would find themselves with three more airplanes before we got in on those, and I don't understand that at all.

Connelly: Well

Rummel: Why the hell -- In one hand -- dealing with us you say well we'll give you -- to get an early position you have to buy a late position but if you do that then you say to American, "well, look TWA has bought airplanes. Now you can have some more earlier -- same ones -- you don't have to buy any more. We'll just move your deliveries up." What kind of a deal is that?

(Transcript of Telephone Conversation-Rummel & Connelly-12/20/57)

Connelly: Well, as far as the contract is concerned, we're not going to be in a position to make any other commitments at this time. We're looking at it from the standpoint of the customer in the deal with us for thirty airplanes.

Rummel: Well, do you have any agreements on international customers that involve American?

Connelly: Well, I think this is something, Bob, we ought to sit down and talk on the table here. I have to check the contract on the big airplane. You, as I recall it, there's the provision in there that the position on the 321 that we quoted you, exclusive of the contracts we had already entered into prior to the life of that contract, and it lists the various contracts in there, making an exception of Lufthansa, who did not have a firm contract, that those were the next available. Now that isn't the exact wording but you could take a look at the 321 so that contract specifically applies to the contract that we've already entered into. And, obviously, for American being the first one in, a slight edge over TWA. But that was known at the time.

Rummel: Yeah. I think so.

Connelly: Yeah.

Rummel: But, in fact I think we have somewhat greater, more satisfactory on the 331 than the 131.

Connelly: Well, perhaps.

Rummel: But you must remember, Bruce, that we have tried repeatedly to find the things we're talking about now, that is, exactly what was -- what is the early deliveries that you're proposing and what we got at our turn -- and I've heard this myself many, many times -- was stated that the position -- the relative position that existed at the time we bought the eight airplanes would be maintained -- not that it was a variable depending on what we ordered subsequently but that the positions would be maintained. As the whole program moved forward, those relative positions would be maintained.

Connelly: Well.

Rummel: And when I look at the -- that was exactly it, and I have asked them their understanding and they have the same understanding. And --

Connelly: (Couple of words please) No.

Rummel: When I look at the target schedules -- well, it is -- that's what it is. It's exactly what it was and there's no doubt about it.

Connelly: We can show you that this matter of relativity has been maintained.

Rummel: Well, it wasn't done last week.

Connelly: The 321 -- you originally placed an order for eight airplanes, and at that time that you needed more small.

11

Finally:

Page 1:

Connelly:

Page 1:

Concally:

10

usually:

1:

usually:

1:

usually:

10

really:

- 5 -

(Transcript of Telephone Conversation-Rummel & Connelly-12/20/57)

Answer 1:

Well, I am sure how... the results... time... San Francisco... printing out... I am sure how...
 the results... time... San Francisco... printing out... I am sure how...

Summary:

Yoh.

Page 10

Although I think he'd probably been surprised of it, but I don't understand -- I know we pressed throughout the field for information on relative positions in detail and all that Hoang would speak of was vague generalities. But with assurance

Generally:

Not, I can't agree with that. At

Page 2:

Well

Comments:

I'm sorry

Page 1:

Why, why — look, Bruce. Why do you think we had to continue to pursue the argument which was never won on — by us at least — on sequence. Why did Ray Cook have to come up and pursue it further with you later — it's because we didn't have the information. We didn't know what to expect.

Generally:

(Couple of words missed.) had not given that information to anyone.

1000

Well, all right, but that's what I'm talking about. We did not have it

Summary:

44

Exhibit 1:

Well, look, Bruce. Why don't we -- how do you want to proceed then?
Do you want me to

Summary:

Any way that would be convenient for you, Bob.

10

Well, I'd like to straighten it out if we can and at least know what we're going to fight about more clearly

Summary:

Yob

██████████

If we're going to.

SECRET

Well, no. I certainly think this is a time, Bob, when we ought to sit down and review this thing across the board and

10

Well, I certainly do, too. I think it's long overdue.

Summary:

(Couple of words missed.) If you look at it in a broad light, it is what we have offered up to this time and what we are prepared to offer is certainly reasonable in light of the sequence of the commitments that were made.

Well, we have to look at it in the light of the -- what has been

(Transcript of Telephone Conversation-Rummel & Connelly-12/20/57)

Connelly: Yes. I think it's a pretty good story. I -- if we're wrong, I'd be glad to hear about it.

Rummel: I'm sure you would, Rich, and there isn't -- I think that this whole thing probably arises -- I mean I have no thought but what Boeing thinks they have acted as they should, but it is not consistent with Mr. Hughes' understanding and certainly I had no understanding concerning constantly moving American forward as we buy additional airplanes. That just didn't even come into it. But we thought we were bettering our relative position when we went from the eight to the fifteen airplanes.

Connelly: We, as a matter of fact, you have, Rob.

Rummel: Well, not in the beginning -- not -- look, Bruce, not according to the target schedules.

Connelly: (Cannot understand several words -- both talking at the same time.)

Rummel: You've advanced -- on the target schedules you've advanced American and you have cut our rate down.

Connelly: No. No.

Rummel: Well, you certainly have.

Connelly: No.

Rummel: But I'm speaking on the relative basis.

Connelly: Yeh. Well, your position has been improved, and this is something that could be clearly demonstrated.

Rummel: Well, it sure.

Connelly: I'm talking now of an over-all fleet. Ah.

Rummel: Well, I'm speaking of the relative -- TWA's relative position to American Airlines. Well, look, I doubt if we can do this before Christmas now, Bruce, but I'll see how my trip to the Coast comes out.

Connelly: Well, why don't you do this, Rob. When you see your plane a little more clearly, give me a ring, and you can count on us being available at any time that is convenient for you.

Rummel: Well, I'd like to move right into it. I imagine Seattle is the better place to do it, don't you with all of your records up there?

Connelly: (Couple of words missed.)

Rummel: All right.

Connelly: Ah, the reason for it is that -- a lot of this, as you know, is the -- a matter of telephone conversations between Howard and Bill, and I think it would be worthwhile if there becomes any misunderstanding on certain points to go over and have a talk with Bill on it.

Rummel: Well, OK.

Connelly: Because I don't want to be in these conversations, obviously, and I don't assume you have other things.

Rummel: No, no. Not in the way that I mean. I mean the way that you mean, naturally.

Connelly: So that the important thing is that I don't know the rest of this thing better if it would be possible for you to be up here because we have all of the facilities available that participated in this thing and I'm afraid if we are not there something will come up that we could not something from Bill or something from Willard or something from the walls.

Rummel: Uh-hm. Well, OK. I'll -- we don't shoot for right after Christmas and I'll confirm it to it.

Connelly: You shoot me a wire.

Rummel: Unless it's up next week, and in that event I'll give you a buzz, too.

Connelly: Fine, Bob.

Rummel: All right. Thank you, Bob.

Connelly: Well, I hope you stop this flitting now.

Rummel: Oh, it's one of those things. I had the forerunner of it apparently in Seattle and I couldn't shake it and I didn't have sense enough to take a day or two off when it would have done some good.

Connelly: Yeh.

Rummel: One of those things, you know. But it's nothing serious. Thanks, Bob. Have a happy Christmas season if I don't see you.

Connelly: Merry Christmas to you, Bob. (Considerable background noise) And we have the airplane taking off here right now.

Rummel: Oh, have you?

Connelly: Yeh. It's going to take off about noon, I think.

Rummel: Oh, are you? My, that's great.

Connelly: We're waiting for a little break in the weather.

Rummel: Well, I -- that's great. I'm glad to hear it. How's the second one coming?

Connelly: The second and third are in final assembly right now and coming along very well.

Rummel: Not out on the field yet?

Connelly: Not on the field yet.

(Transcript of Telephone Conversation-Rummel & Connelly-12/20/57)

Connelly: First one I called. I called her at the house of Peter and she.

Rummel: Yeh. Oh, yes.

Connelly: Yeh.

Rummel: I thought it was due out before then. Well, that's fine, Bruce. I hope she -- I hope it comes out all right. I'm sure it will.

Connelly: Fine and dandy.

Rummel: OK.

Connelly: OK, Rob.

Rummel: Good-bye.

Connelly: Good-bye.

(TWA Board Minutes-June 26, 1959)

The regular meeting of the Board of Directors of Trans World Airlines, Inc. was held on Friday, June 26, 1959, at 9:30 a.m., at the offices of the Corporation, 380 Madison Avenue, New York, New York.

Directors present were: Messrs. Fred W. Ayers

E. O. Cocke

Raymond A. Cook

A. V. Leslie

Sidney Maestre

Warren Lee Pierson

C. H. Price

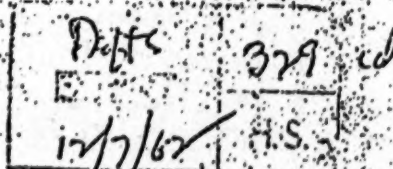
Ben-Fleming Sessel

A. D. Simpson

T. A. Slack

Charles S. Thomas

Milton H. West, Jr.



constituting a quorum,

Directors absent were: Messrs. Palmer Bradley

John A. Collings

Oscar Holcombe

M. F. Montross

H. E. Rogers

Loyd Wright (entered meeting later)

Mr. Carl S. Rowe of Counsel was present by invitation.

Mr. Warren Lee Pierson, Chairman of the Board, called the meeting to order and thereafter presided.

The Secretary of the Corporation, Mr. Ronald Duckworth, acted as Secretary of the meeting.

APPROVAL OF MINUTES

Minutes of the Board of Directors meeting of May 27, 1959, and of the Executive Committee meeting of June 4, 1959, were approved.

At this point, Mr. Loyd Wright entered the meeting.

REPORT OF THE CHAIRMAN OF THE BOARD

The Chairman of the Board reported on proceedings at the IATA E

next meeting of the Committee would ~~be held~~ just prior to the Annual General Meeting in Tokyo, Japan, in October 1959.

He commented on the satisfactory financial results in 1958 of Ethiopian Airlines which is managed by this Corporation and on the benefits derived by both parties from this association.

REPORT OF THE SENIOR VICE PRESIDENT - FINANCE & TREASURER

The Senior Vice President - Finance & Treasurer, Mr. A. V. Leslie, reviewed financial statements for May 1959 and presented a financial forecast for June. He presented and discussed a series of charts comparing the current operations of the Corporation with those of American Airlines and United Air Lines and reviewed an analysis of the Corporation's employment and productivity statistics.

REPORT OF THE SENIOR VICE PRESIDENT & SYSTEM GENERAL MANAGER

The Senior Vice President & System General Manager, Mr. E. O. Cocke, presented a report on current operating performance and described in detail the operating problems encountered with the Boeing 707 jet aircraft.

REPORT OF THE PRESIDENT

The President, Mr. Charles S. Thomas, reported that the Corporation was operating at a profit in the current year compared with the loss of over \$12 million at the same date in 1958.

He advised that this improvement had resulted from several factors within the control of management -- including the recent organization plan, improved employee morale, and increased cost consciousness on the part of management.

He advised that with the completion of the basic organization plan for the Corporation, he would now devote his attention to the problems of the International Division which was currently operating at a substantial loss and, following an inspection of the route, would give a report to the Board of Directors at the August meeting.

He advised that the Corporation was studying the submission of bids for MATS' charter operations for the year beginning October 1, 1959, and stated that strong competition was expected for this business from all bidders.

AUTHORITY TO LEASE THREE ADDITIONAL BOEING MODEL 707-131 AIRCRAFT FROM HUGHES TOOL COMPANY

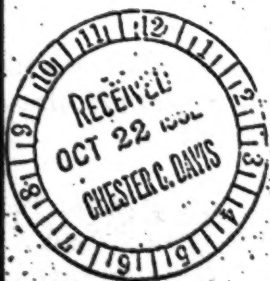
The President referred to the action of the Board at its meetings of January 30, February 27, and March 31, 1959, with respect to the leasing of Boeing Model 707-131 jet aircraft from Hughes Tool Company. He stated that he considered

it would be desirable if authority were given under which the Corporation might lease from Hughes Tool Company three Boeing Model 707-131 jet aircraft in addition to those for which authority had previously been given, making a total of fifteen such aircraft which could be leased from Hughes Tool Company on a day-to-day basis. It was pointed out that all but one of the leases already executed provided that they would terminate in any event on June 30, 1959, and that it was proposed to extend this date to September 30, 1959.

The President further stated that pursuant to authorization of the Board at its meeting of March 31, 1959, the Corporation had purchased approximately \$3,500,000 of spare parts and provisioning from Hughes Tool Company for use in connection with the operation of such jet aircraft. He advised that Hughes Tool Company owned or had on order additional 707-131 spare parts and provisioning, that Hughes Tool Company was willing to sell the balance of such spare parts and provisioning to the Corporation at Hughes Tool Company's cost when and if requested by this Corporation and that it would be desirable if authority were given under which the Corporation might purchase such spare parts and provisioning.

After discussion, upon motion duly made and seconded, the following resolutions were unanimously adopted (Messrs. Ayers, Price and Slack not voting):

RESOLVED, that the Chairman of the Board, or the President, or any Vice President of this Corporation be, and each hereby is, authorized to execute and deliver an agreement or agreements covering the leasing by this Corporation of up to a total of fifteen Boeing Model 707-131 jet aircraft (including the twelve such aircraft with respect to which authority had previously been given) from Hughes Tool Company on a day-to-day basis at a rental of \$2,500 per aircraft per day, and on substantially the same terms and conditions as the Boeing Model 707-131 jet aircraft heretofore leased from Hughes Tool Company, such leases to be subject to the approval of the Civil Aeronautics Board and any necessary consents under applicable indentures of this Corporation.



RESOLVED, that the Chairman of the Board, or the President, or any Vice President of this Corporation be, and each hereby is, authorized to execute and deliver an agreement or agreements covering the purchase by this Corporation from Hughes Tool Company, at Hughes Tool Company's cost, of such additional 707-131 spare parts and provisioning as are owned by Hughes or are on order by Hughes Tool Company and are available for use in connection with the

DX 54, page 4

page 4

(TWA Board Minutes-June 26, 1959)

operation by this Corporation of a total of fifteen Boeing Model 707-131 jet aircraft when leased to this Corporation by Hughes Tool Company, such agreement to be subject to approval of the Civil Aeronautics Board.

**AUTHORITY TO LEASE BOEING MODEL 707 AIRCRAFT
TO NORTHEAST AIRLINES, INC.**



The Senior Vice President & System General Manager advised the meeting that it was anticipated that during certain months and at off-peak travel hours, this Corporation would have Boeing Model 707 aircraft available for profitable lease to another carrier. He further advised that negotiations had been conducted with Northeast Airlines, Inc. relating to lease of Boeing 707-131 aircraft by this Corporation to the extent necessary to enable Northeast to provide daily round-trip service between New York and Miami between late evening and morning hours. The lease would provide for use, during the first six months, of this Corporation's crews and maintenance. The base rental would be \$3.10 per revenue plane mile, and Northeast would also pay to this Corporation 50% of the gross passenger revenue in excess of \$4.50 per revenue plane mile during any month up to \$5.30 per revenue plane mile, and 25% of such gross passenger revenue in excess of \$5.30 per revenue plane mile.

There was presented to the meeting a letter of intent, not constituting a contract, between this Corporation and Northeast Airlines, Inc., dated June 17, 1959, contemplating such a lease commencing September 1, 1959, and continuing for nine months, terminable by either party on sixty days' notice. The letter of intent contemplates that Northeast crews would operate the flight after February 29, 1960, the rent being adjusted accordingly. It also contemplates that Boeing 707-331 aircraft sufficient to provide an additional daily round trip would be leased on similar terms when this Corporation has placed three such aircraft in operation, and at a later date sufficient 707-331 aircraft time for a third daily round trip would be arranged on similar terms. The proposed lease of Boeing 707-131 aircraft would be conditioned on this Corporation's being the operator of at least twelve such aircraft and on the terms of, and any necessary approvals under, indentures or financing agreements, approvals of persons having an interest in the airplanes or engines, and any necessary approval of the Civil Aeronautics Board. The letter of intent between this Corporation and Northeast Airlines, Inc., dated June 17, 1959, was ordered marked and filed with the Minutes of the meeting.

After discussion, upon motion duly made, seconded and carried, it was

RESOLVED, that the proper officers of this Corporation be, and they hereby are, authorized to negotiate, execute and deliver on behalf of this Corporation leases and agreements providing for lease by this Corporation of Boeing 707-131 and Boeing 707-331 aircraft to Northeast

DX 54, page 5
(TWA Board Minutes-June 26, 1959)

Airlines, Inc. as outlined in the letter of intent dated June 17, 1959, with such modifications and other terms and conditions as the officer executing the same may deem to be in the best interests of this Corporation.

ELECTION OF MESSRS. W. L. TRIMBLE, S. L. HIGGINBOTTOM, AND JOHN P. MEAD AS OFFICERS

The President, Mr. Charles S. Thomas, referred to the action of the Board at its meeting of May 27, 1959, and to the action of the Executive Committee at its meeting of June 4, 1959, electing additional Officers and changing titles of other Officers to implement the Corporation's new organization plan.

He advised the meeting that in order to further activate the plan, it was desirable to elect Mr. W. L. Trimble as Regional Vice President - Transportation, Mr. S. L. Higginbottom as Assistant Vice President - Engineering, Flight Test and Inspection, and Mr. John P. Mead as Assistant Vice President - Industrial Relations.

After discussion, upon motion duly made and seconded, the following resolutions were adopted:

RESOLVED, that Mr. W. L. Trimble be, and he hereby is, elected Regional Vice President - Transportation of this Corporation at an annual salary effective June 26, 1959, of \$25,500, to hold office in accordance with the By-Laws.

RESOLVED, that Mr. S. L. Higginbottom be, and he hereby is, elected Assistant Vice President - Engineering, Flight Test and Inspection of this Corporation at an annual salary effective June 26, 1959, of \$20,000, to hold office in accordance with the By-Laws.

RESOLVED, that Mr. John P. Mead be, and he hereby is, elected Assistant Vice President - Industrial Relations of this Corporation at an annual salary effective June 26, 1959, of \$22,000, to hold office in accordance with the By-Laws.

ADJUSTMENT IN SALARY OF MR. JOHN T. LOGAN

The Senior Vice President and System General Manager referred to the action of the Board at its meeting of April 23, 1959, electing Mr. John T. Logan as Assistant Vice President - Scheduling, and to the action of the Board at its meeting of May 27, 1959, increasing Mr. Logan's annual salary from \$14,760 to \$16,900.

Bd. of Dir. Meeting 6/26/59
Page 6

He advised the meeting that in order to place Mr. Logan's position in proper relationship with other corporate positions and to maintain a proper salary differential with the Schedule Committee representatives reporting to Mr. Logan, it was deemed necessary that Mr. Logan's annual salary be increased to \$18,000 effective April 23, 1959.

After discussion, upon motion duly made, seconded and carried, it was

RESOLVED, that effective as of April 23, 1959, the salary of
Mr. John T. Logan, Assistant Vice President -
Scheduling, shall be at the annual rate of \$18,000.

AUTHORITY TO ARBITRATE QUESTION OF PAYMENT TO AMERICAN AIRLINES
UNDER MUTUAL ASSISTANCE AGREEMENT

The Chairman of the Board advised the meeting that there was a question under the Mutual Assistance Agreement dated October 20, 1958, between this Corporation and five other airlines, as to whether or not payments were due by this Corporation and other airlines to American Airlines, based upon the strike of American pilots which commenced on December 19, 1958, and that as a result, it had been proposed that the question of whether or not such payments were due American be decided by an arbitrator and that the decision of the arbitrator on this question be binding on the parties. The meeting was further advised that the officers of the Corporation proposed to enter into an agreement with American Airlines, Capital Airlines, Eastern Air Lines, Pan American World Airways, and United Air Lines providing for such arbitration.

After discussion, upon motion duly made and seconded, the following resolution was unanimously adopted:

RESOLVED, that the proper officers of this Corporation be, and they hereby are, authorized to enter into an arbitration agreement between this Corporation and American Airlines, Inc., Capital Airlines, Inc., Eastern Air Lines, Inc., Pan American World Airways, Inc., and United Air Lines, Inc., providing for final determination by an arbitrator of whether or not, as a result of the strike of American Airlines' pilots commencing December 19, 1958, the Corporation and other airlines are obligated to make payments to American Airlines under the agreement dated October 20, 1958, between this Corporation and American Air Lines, Inc., Capital Airlines, Inc., Eastern

(TWA Board Minutes-June 26, 1959)

Jet Items	\$ 787,400
Non-Jet Items	273,446
Reserve Budget	<u>50,000</u>
	\$1,110,846



It was pointed out that the net capital outlay under the above budget would be \$801,846, because the budget included the amount of \$309,000 for jet fuel-storage facilities at Boston, Kansas City and New York (La Guardia) which would be financed by fuel vendors without interest except for the amount of \$13,000 on which interest 4-1/2% would be charged.

CHANGE IN DATE OF REGULAR MEETINGS OF BOARD OF DIRECTORS

It was suggested to the meeting that the date of the regular meetings of the Board of Directors be changed from the last Friday of each month to the last Thursday of each month.

After discussion, upon motion duly made, seconded and carried, it was

RESOLVED, that hereafter the regular meetings of the Board of Directors of this Corporation shall be held on the last Thursday of each month at such time and place as shall be designated in the notice of such meetings.

CONSENT TO SALE OF SIX BOEING MODEL 707 AIRCRAFT BY HUGHES TOOL COMPANY

The President referred to the eighteen Boeing Model 707-331 aircraft on order by Hughes Tool Company under contracts assignable to the Corporation, advised the meeting that he had been informed by Hughes Tool Company of its proposal to assign its rights to six of such aircraft to Pan American World Airways, subject to the approval of Boeing Airplane Company. The President stated that he had advised Hughes Tool Company that the Corporation had no objection to and consented to the assignment.

After discussion, upon motion duly made and seconded, the following resolution was unanimously adopted (Messrs. Ayers, Price and Slack not voting):

RESOLVED, that the action of the President in consenting to the assignment by Hughes Tool Company of its rights to six of the eighteen Boeing Model 707-331 aircraft on order by Hughes Tool Company under contracts assignable to this Corporation be, and it hereby is, ratified, confirmed and approved.

DX 54, page 8
(TWA Board Minutes-June 26, 1959)

DATE AND PLACE OF NEXT BOARD MEETING

It was the consensus of the meeting that the regular meeting of the Board of Directors scheduled to be held on July 30, 1959, should be cancelled and that the regular meeting scheduled to be held on August 27, 1959, should be held at 9:30 a. m. at the offices of the Corporation, 380 Madison Avenue, New York, New York.

ADJOURNMENT

There being no further business to come before the meeting, it was adjourned at 11:55 a. m.

Ronald Duckworth

Ronald Duckworth
Secretary



EXHIBIT

H.S.

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1. INTRODUCTION

1. A. BACKGROUND.

By agreement dated May 14, 1960, HUGHES TOOL COMPANY AND ATLAS CORPORATION AGREED TO SUBMIT A PROPOSED FORM OF MERGER AGREEMENT TO THE BOARDS OF DIRECTORS OF THE TWO AIRLINES WITH THEIR RECOMMENDATIONS THAT IT BE APPROVED.

ON THE SAME DATE, HUGHES TOOL COMPANY (TOOLCO) AND NORTHEAST AIRLINES, INC. (NORTHEAST) ENTERED INTO A LOAN AGREEMENT WHEREBY TOOLCO AGREED TO MAKE LOANS TO NORTHEAST AGGREGATING \$9,500,000. THE STATED PURPOSE OF THE LOAN IS TO PROVIDE NORTHEAST WITH ADDITIONAL FUNDS FOR WORKING CAPITAL AND FOR USE IN CONNECTION WITH A PROGRAM TO COMMENCE OPERATIONS WITH SIX CONVAIR 440 AIRCRAFT, WHICH WILL BE MADE AVAILABLE TO NORTHEAST FROM THE RUMDER OF SUCH AIRCRAFT ORDERED BY TOOLCO. THE AGREEMENT PROVIDES THAT THE FIRST LOAN SHALL BE IN THE AMOUNT OF \$5,000,000 AND SHALL BE MADE BY JUNE 29, 1960. IT ALSO PROVIDES THAT IF A MERGER IS APPROVED, THE AMOUNT OUTSTANDING SHALL BE CONVERTED, PRIOR TO THE EFFECTIVE DATE OF THE MERGER, INTO STOCK OF NORTHEAST ON THE BASIS OF ONE SHARE OF STOCK FOR EACH \$5.25 OF INDEBTEDNESS. THE LOAN IS NOT DEPENDENT ON THE MERGER.

By letter dated May 17, 1960, THE CHAIRMAN OF THE BOARD OF DIRECTORS OF NORTHEAST ADVISED THE PRESIDENT OF TWA THAT ITS BOARD OF DIRECTORS HAD CONSIDERED A FORM OF PROPOSED MERGER AGREEMENT BETWEEN NORTHEAST AND TWA, AND VOTED TO RECOMMEND TO ITS STOCKHOLDERS A MERGER WITH TWA IN ACCORDANCE THEREWITH. ALSO, AS STATED IN THE LETTER, THE

BOARD VOTED TO AUTHORIZE THE MEMBERS THEREOF TO EXECUTE THE MERGER AGREEMENT AT ANY TIME ON OR BEFORE JULY 31, 1960, UPON ADVICE THAT THE TWA BOARD OF DIRECTORS HAS APPROVED THE TERMS OF THE MERGER AGREEMENT, AND IS PREPARED TO EXECUTE THE SAME SUBJECT TO SUCH CHANGES AS MAY BE REQUESTED BY TWA AND APPROVED BY NORTHEAST. A COPY OF THE TRANSMITTAL LETTER AND THE PROPOSED FORM OF MERGER AGREEMENT ARE ATTACHED HERETO AS APPENDICES 1-A AND 1-B.

1. B. THE PROPOSED MERGER AGREEMENT

NORTHEAST SHALL BE MERGED INTO TWA, WHICH SHALL CONTINUE IN EXISTENCE AS THE SURVIVING CORPORATION, AND THEREAFTER THE INDIVIDUAL EXISTENCE OF NORTHEAST SHALL CEASE.

THE MERGER WILL BE EFFECTED THROUGH CONVERSION OF THE SHARES OF NORTHEAST INTO SHARES OF THE SURVIVING CORPORATION ON THE BASIS OF ONE SHARE OF COMMON STOCK OF NORTHEAST FOR ONE-THIRD OF ONE SHARE OF COMMON STOCK OF TWA, THE SURVIVING CORPORATION.

TWA, AS THE SURVIVING CORPORATION, WILL ACQUIRE ALL OF NORTHEAST'S PROPERTY AND ASSETS, AND WILL ASSUME ALL OF NORTHEAST'S LIABILITIES AND OBLIGATIONS, AS PROVIDED IN THE MERGER AGREEMENT.

THE MERGER AGREEMENT MUST BE APPROVED BY A TWO-THIRDS VOTE OF THE STOCKHOLDERS OF TWA AND NORTHEAST, AS PROVIDED BY LAW. IN ADDITION, IN ACCORDANCE WITH THE TERMS OF THE MERGER AGREEMENT, IT MUST BE APPROVED BY A MAJORITY OF THE STOCKHOLDERS OF TWA, OTHER THAN TGO, VOTING AT THE MEETING.

THE MERGER AGREEMENT MAY BE TERMINATED PRIOR TO THE EFFECTIVE DATE (WHETHER BEFORE OR AFTER SUBMISSION TO THE STOCKHOLDERS OF EITHER

THE TWO AIRLINES, AND, AFTER JULY 31, 1962, AT THE ELECTION OF EITHER BOARD IF THE AGREEMENT HAS NOT BY THAT DATE RECEIVED THE NECESSARY APPROVAL OF THE CIVIL AERONAUTICS BOARD OR THE SECURITIES AND EXCHANGE COMMISSION OR CERTAIN OTHER EVENTS HAVE NOT OCCURRED AS SET FORTH IN ARTICLE EIGHTH OF THE PROPOSED MERGER AGREEMENT. IN ADDITION, IT MAY BE TERMINATED AT THE ELECTION OF EITHER BOARD IN THE EVENT THAT A SUBSTANTIAL ADVERSE CHANGE IN THE NATURE, CONDITION OR SCOPE OF THE PRESENT BUSINESS OF THE OTHER CORPORATION SHALL OCCUR SUBSEQUENT TO THE DATE OF THE AGREEMENT.

X
Pa 2

NORTHEAST AIRLINES, INC.
LOGAN INTERNATIONAL AIRPORT
BOSTON 22, MASSACHUSETTS

May 17, 1960

ATTENTION MR. CHARLES S. THOMAS, *President*

TRANS WORLD AIRLINES, INC.,
380 Madison Avenue,
New York, N. Y.

Dear Sirs:

We wish to inform you that the proposed Agreement of Merger annexed hereto (herein called the "Merger Agreement") has been submitted to and considered by the Board of Directors of this Corporation and that the Board of Directors has voted to recommend to the stockholders of this Corporation a merger of this Corporation with and into Trans World Airlines, Inc. (herein called "TWA") upon substantially the terms and conditions therein set forth and to instruct the Chairman of the Board of Directors to present the Merger Agreement forthwith to TWA for consideration by its Board of Directors. The Board of Directors of this Corporation has further voted to authorize the directors members thereof to execute the Merger Agreement as submitted, or with such changes therein as may be mutually agreed upon, at any time on or before July 31, 1960, upon approval of the Merger Agreement (with such changes, if any) by a majority of the directors of TWA.

In accordance with the action taken by the Board of Directors of this Corporation, the proposed Merger Agreement is submitted to you herewith for presentation to the Board of Directors of TWA. A majority of the directors of this Corporation are prepared to execute at any time on or before July 31, 1960 the Merger Agreement as so submitted, or with such changes therein requested by you as they may approve, forthwith upon receipt from you during such period of advice that the Merger Agreement (in the form in which it is proposed to be executed) has been approved by the Board of Directors of TWA and that a majority of the directors members thereof are similarly prepared to execute the same.

Very truly yours,

NORTHEAST AIRLINES, INC.

By
Chairman of the Board

3. ADVANTAGES OF MERGER TO TWA

3. A. INCREASED UTILIZATION OF EQUIPMENT.

THE PRESENT ROUTE STRUCTURE OF TWA HAS BUILT IN A WIDE VARIATION IN SEASONAL TRAFFIC LEVEL, TO THE DETRIMENT OF ITS EARNINGS ABILITY.

DOMESTICALLY, TWA'S ROUTES HAVE A WIDE RANGE IN TRAFFIC VOLUME BETWEEN THE SUMMER PEAK AND WINTER LOW OF SOME 50%. THE INTERNATIONAL DIVISION HAS EVEN GREATER VARIATION SINCE BETTER THAN 80% OF TRAFFIC ACROSS THE ATLANTIC IS CARRIED DURING THE FIVE MONTHS MAY-SEPTEMBER. A TABULATION OF TWA'S PASSENGER MILES AND PASSENGER REVENUE, BY MONTH, FOR 1959 AND THE FIRST QUARTER OF 1960 IS SET FORTH IN APPENDICES 3-A-1 AND 3-A-2. EXAMINATION OF THESE DATA SHOWS THAT TWA'S SYSTEM PASSENGER MILES IN 1959 TOTALLED 1.03 BILLION FOR THE FIRST QUARTER AND 1.62 BILLION FOR THE THIRD QUARTER. THUS, THE THIRD QUARTER TRAFFIC WAS 155% OF THE FIRST QUARTER'S.

RELIEF OF THIS SITUATION WOULD BE THE ACQUISITION OF ROUTES WHERE THE HEAVIEST BALANCE OF VOLUME FALLS DURING TWA'S LOW PERIOD. COULD THIS BE DONE, HIGHER ANNUAL UTILIZATION OF EQUIPMENT WOULD RESULT WITH ATTENDANT ECONOMY IN THE NEED FOR CAPITAL INVESTMENT IN AIRCRAFT AND OVERHAUL FACILITIES AND INCREASED OPERATING EFFICIENCY.

A MERGER WITH NORTHEAST WHICH WOULD AFFORD TWA ACCESS TO THE NEW YORK-FLORIDA MARKET (WITH ITS HIGH WINTER TRAFFIC PEAK CORRESPONDING TO TWA'S LOW TRAFFIC SEASON) WOULD CONTRIBUTE TO

THE ALLEVIATION OF TWA'S EXISTING SEASONAL TRAFFIC IMBALANCE.
THE COMPLEMENTARY NATURE OF FLORIDA'S AND TWA'S SEASONAL TRAFFIC
VARIATIONS IS SHOWN IN CHART FORM IN APPENDIX 3-A-3 TO THIS
REPORT. MIAMI'S DOMESTIC PASSENGER TRAFFIC IN THE FIRST QUARTER
IS 137% OF THE THIRD QUARTER IN CONTRAST TO TWA'S VOLUME WHERE
THE THIRD QUARTER SUBSTANTIALLY EXCEEDS THE FIRST.

1959MIAMI DOMESTIC PASSENGERS1ST QUARTER
3RD QUARTER956,535
726,410

PERCENT 1ST QUARTER OF 3RD QUARTER

137 %

DX 57, page 43
(The Huntington Report-1960)

3. INCREASED REVENUES FROM MERGER.

THE MERGED COMPANY WILL REALIZE INCREASED REVENUES FROM TWO SOURCES, (1) INCREASED PARTICIPATION IN FLORIDA TRAFFIC BY WAY OF GREATER UTILIZATION OF EQUIPMENT AND (2) INCREASED TRAFFIC ON TWA'S SYSTEM FROM NEW ONE-CARRIER SERVICE FOR NORTHEAST CITIES.

NO ESTIMATE HAS BEEN MADE AS TO THE EXACT AMOUNT OF THESE POTENTIAL INCREASES IN REVENUES. IT IS OBVIOUS, HOWEVER, THAT ADDITIONAL FREQUENCIES PROVIDED WITH AVAILABLE AND OTHERWISE UNUSABLE TIME COULD BE PROVIDED AT MINIMUM COST, AND THAT ADDITIONAL TRAFFIC ATTRACTED TO EXISTING SERVICES WOULD INCUR ONLY NOMINAL EXPENSE. IT DOES APPEAR, THEREFORE, THAT THE INCREASED REVENUES WILL BE SIGNIFICANT FROM THE PROFIT AND LOSS POINT OF VIEW.

2. C. ECONOMIES RESULTING FROM THE MERGER.

ECONOMIES WILL BE REALIZED FROM TWO SOURCES: (1) INCREASED OPERATING EFFICIENCY AND PRODUCTIVITY OF PLANT, FACILITIES AND PERSONNEL DUE TO THE LEVELING OF TWA'S PRESENT SEASONAL IMBALANCE, AND (2) REDUCTION IN OPERATING EXPENSES FROM CONSOLIDATION OF PLANT, FACILITIES, ETC.

TWA'S STAFF HAS ESTIMATED THAT SAVINGS IN UNIT COSTS OF THE TWO AIRLINES ON A MERGED BASIS WOULD REPRESENT A REDUCTION OF ABOUT 1% FROM THE TOTAL OPERATING EXPENSES OF THE TWO AIRLINES UNMERGED. IF THERE WERE NO INCREASE IN VOLUME, THIS THEN WOULD MEAN SAVINGS OF ABOUT \$4,000,000 FOR THE YEAR ENDING DECEMBER 31, 1961. AS MORE PROBABLY WILL BE THE CASE, VOLUME INCREASES FOR THE MERGED AIRLINE RESULTING FROM THE INCREASED UTILIZATION DESCRIBED IN SECTIONS 3-A AND 3-B WILL BE OF SUCH MAGNITUDE THAT THEY WILL (AS A MINIMUM) ABSORB THE PERSONNEL WHO OTHERWISE WOULD BE RELEASED AND WHOSE RELEASE WOULD PROVIDE A PORTION OF THE 1% SAVING.

11/2/61
J. H. Hunt
J. H. Hunt

4. c. TERMS OF EXCHANGE.

THE MERGER AGREEMENT CALLED FOR AN EXCHANGE OF TWA STOCK FOR NORTHEAST ON A 1 FOR 3 BASIS, OR ONE-THIRD OF ONE SHARE OF TWA COMMON STOCK FOR EACH SHARE OF COMMON STOCK OF NORTHEAST. THE EXCHANGE REPRESENTS THE APPROXIMATE RELATION OF THE MARKET PRICES OF THE TWO STOCKS DURING RECENT MONTHS. THE FOLLOWING TABLE SHOWS THE MARKET QUOTATIONS FOR THE TWO STOCKS ON MAY 13, 1960, THE DAY BEFORE THE PRELIMINARY AGREEMENT BETWEEN TOOLCO AND ATLAS:

	<u>SALES</u>	<u>OPEN</u>	<u>HIGH</u>	<u>LOW</u>	<u>CLOSE</u>	
NORTHEAST	900	4 3/4	5	4 3/4	5	11/14
TWA	1,100	13 5/8	14 1/8	13 5/8	14 1/8	13 5/8
						12 1/8
* RATIO: 1-2.8						1: 2.4; 1: 3.3

PAGE 1 OF APPENDIX 4-C-1 IS A CHART SHOWING THE AVERAGE PRICE OF THE TWO STOCKS FOR THE PAST TWO YEARS BY QUARTERS. PAGE 2 CONTAINS A LISTING OF THE HIGH, LOW AND AVERAGE PRICES OF THE TWO STOCKS BY QUARTERS FOR THE PERIOD 1957-1960 (1ST QUARTER).

*William
H.*

(TWA Fleet Requirements 1961-70, dated 3/1/61)

TWA FLEET REQUIREMENTS

1961-1970

ISSUED: MARCH 1, 1961

PREPARED BY:

THE PLANNING AND RESEARCH DEPARTMENT
TRANS WORLD AIRLINES, INC.
380 MADISON AVENUE
NEW YORK CITY

(TWA Fleet Requirements 1961-70, dated 3/1/61)

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PART V

EQUIPMENT AVAILABILITY

CURRENT AVAILABILITY OF U. S. AIRCRAFT FOR LEASE AND/OR PURCHASE IS DISCUSSED AND ILLUSTRATED IN PART V OF THIS REPORT. FOREIGN BUILT AIRCRAFT, EXCEPT FOR THE DOUGLAS-CARAVELLE, ARE NOT DISCUSSED SINCE INVESTIGATIONS SHOW THEY CANNOT SATISFY AIRPLANE STANDARDIZATION AND SUPPORT REQUIREMENTS WITH PARTICULAR REFERENCE TO PROVIDING A SOLUTION TO TWA'S EQUIPMENT PROBLEM ON A NEAR TERM BASIS.

PART V POINTS OUT THAT LEAD TIME REQUIRED FOR DELIVERY OF AIRCRAFT CALLS FOR EARLY COMMITMENTS TO THE MANUFACTURER IN ORDER TO MINIMIZE TWA'S LOSS OF REVENUE GENERATION IN RELATION TO ITS MARKET POTENTIAL. THE REPORT ALSO POINTS OUT THAT ANY DELAY IN CONSUMMATING EQUIPMENT COMMITMENTS WILL BE REFLECTED IN NEARLY COMMENSURATE DELAY IN PROVIDING EQUIPMENT FOR TWA'S USE.

PART V IS DIVIDED INTO THE FOLLOWING SECTIONS:

MANUFACTURING LEAD TIME

SIGNIFICANT AIRPLANE CHARACTERISTICS

SHORT TERM VS. LONG TERM SOLUTIONS

AIRPLANE DESCRIPTIONS

LEASE POSSIBILITIES

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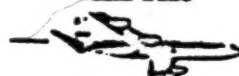
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PART V IS DIVIDED INTO THE FOLLOWING SECTIONS:

- MANUFACTURING LEAD TIME
- SIGNIFICANT AIRPLANE CHARACTERISTICS
- SHORT TERM VS. LONG TERM SOLUTIONS
- AIRPLANE DESCRIPTIONS
- LEASE POSSIBILITIES
- PURCHASE POSSIBILITIES
- CAPABILITY OF VARIOUS NEW FLEETS TO GENERATE REVENUE

V EQUIPMENT AVAILABILITY

MANUFACTURING LEAD TIME

PART IV OF THIS REPORT SHOWS THAT TWA'S REQUIREMENT FOR ADDITIONAL AIRCRAFT CALLS FOR EARLY SOLUTION IN ORDER TO RECAPTURE ITS LOST SHARE OF THE MARKET AND TO MORE FULLY SERVE ITS EXPANDING POTENTIAL MARKETS, BOTH DOMESTIC AND INTERNATIONAL.

NORMAL LEAD TIME FOR CONSTRUCTION OF A JET AIRLINER OF A TYPE ALREADY IN SUBSTANTIAL PRODUCTION IS ONE TO ONE AND ONE-HALF YEARS. LEAD TIME FOR NEW TYPE JET AIRCRAFT NOT IN PRODUCTION VARIES FROM THREE TO FOUR YEARS. THESE SIZEABLE LEAD TIMES CALL FOR EARLY EQUIPMENT COMMITMENTS. FURTHER, IT SEEMS OBVIOUS THAT THE MOST ECONOMICAL AND QUICKEST WAY FOR TWA TO EXPAND ITS FLEET AND TO SATISFY ITS SHORT TERM MARKET REQUIREMENTS IS TO ACQUIRE ADDITIONAL AIRCRAFT OF SUBSTANTIALLY THE SAME TYPE IT NOW SUCCESSFULLY OPERATES AND WHICH TYPES ARE IN PRODUCTION. THIS COULD BE DONE EITHER BY LEASE OR PURCHASE OR A COMBINATION OF BOTH, DEPENDING ON FINANCING AND OTHER CONSIDERATIONS.

SIGNIFICANT AIRPLANE CHARACTERISTICS

A SUBSEQUENT PART OF THIS REPORT COMPARES AND ANALYZES THE ECONOMICAL AND OPERATIONAL ADVANTAGES AND DISADVANTAGES OF EACH TYPE OF AIRPLANE BEING CONSIDERED. HENCE, THIS SUBJECT WILL NOT BE CONSIDERED IN DETAIL HERE. HOWEVER, IT IS PERHAPS WELL TO POINT OUT AT THE OUTSET THAT DERIVATIVE AIRPLANE DESIGNS (I.E., THOSE DERIVED FROM THE ORIGINAL TYPES) NOW BEING PRODUCED SUCH AS THE SECOND GENERATION, FAN-POWERED BOEINGS, CONVAIRS AND DOUGLAS', WILL ALL OPERATE SO CLOSE TO THE SPEED OF SOUND THAT VIRTUALLY NO SPEED ADVANTAGES OF ONE TYPE COMPARED TO THE OTHER WILL EXIST BETWEEN AIRLINES HAVING THE TURBO-FAN POWERED JETS. THIS SITUATION WILL EXIST FOR SEVERAL YEARS AT LEAST.

CONSEQUENTLY, WHEN THE AIRLINES ARE EQUIPPED WITH FAN EQUIPMENT, DIFFERENCES IN SCHEDULES BETWEEN AIRLINES WILL REFLECT VARIATIONS IN AIRLINE ROUTES, OPERATIONAL PRACTICES AND SCHEDULE DECISIONS RATHER THAN AIRPLANE PERFORMANCE. FOR COMPARABLE FLIGHT SEGMENTS, SCHEDULED TIMES COULD BE VIRTUALLY THE SAME FOR ALL AIRLINES HAVING MODERN TURBO-FAN EQUIPMENT. THEREFORE, THE CHARACTERISTICS OF LATE MODEL TURBO-FAN EQUIPMENT OF GREATEST SIGNIFICANCE TO THE AIRLINE ARE:

1. AIRPLANE OPERATING COST CHARACTERISTICS IN RELATION TO THE MARKET TO BE SERVED. RELATIONSHIP OF PER MILE VS. SEAT MILE COST TO THE RELATIVE GROWTH OF THE FIRST CLASS AND SKY COACH MARKETS.
2. AIRPLANE AIRPORT PERFORMANCE CHARACTERISTICS. WILL THE AIRCRAFT PERFORMANCE CHARACTERISTICS MATCH AIRPORT CHARACTERISTICS IN THE MARKETS INTENDED TO BE SERVED?



3. PUBLIC ACCEPTANCE OF THE AIRPLANE. IS THE AIRPLANE COMFORTABLE AND ATTRACTIVE TO THE CUSTOMER? DOES IT HAVE RANGE AND OTHER CHARACTERISTICS REQUIRED TO FLY THE ROUTES THE CUSTOMER DESIRES? DOES THE AIRPLANE AND THE MANUFACTURER HAVE A GOOD REPUTATION?
4. AIRCRAFT SUPPORT PROGRAM. AVAILABILITY AND COST OF SPARE PARTS, GROUND SUPPORT EQUIPMENT, AND CORRECTIVE (MAINTENANCE) ENGINEERING.
5. SALES APPEAL. ADVERTISING IMPACT OF THE AIRCRAFT ON THE PUBLIC AND THE SERVICE OFFERED BY THE AIRCRAFT.
6. ECONOMIC AND MECHANICAL OBSOLESCENCE FACTORS.
7. AIRPLANE SIZE. IS THE AIRPLANE SIZE CORRECT IN RELATION TO THE MARKET TO BE SERVED?

IN ANY EVENT, HISTORY PROVES THAT COMPETITIVE SPEEDS CANNOT BE SACRIFICED TO ANY SIGNIFICANT EXTENT FOR ANY SIGNIFICANT PERIOD OF TIME WITHOUT ECONOMIC PENALTY TO THE AIRLINE. WHILE BEYOND THE SCOPE OF THIS REPORT, PERHAPS IT IS ADMISSABLE TO OBSERVE, THAT WITH SCHEDULE SPEED EQUALITY A VIRTUAL CERTAINTY IF TWA PROCURES MODERN TURBO-FAN JETS, TWA ADVERTISING CAN BEST BE DIRECTED TO OTHER AREAS OF INTEREST TO THE PASSENGER THAN SPEED - SCHEDULE CONVENIENCE, IN-FLIGHT PASSENGER SERVICE, COMFORT OF THE FLIGHTS. GROUND FACILITIES. INSTANT RESERVATIONS, ETC. THIS SUGGESTS TWA SHOULD BUILD TOWARD A PUBLIC IMAGE OF UNEXCELLED SERVICE AND CONVENIENCE RATHER THAN ALMOST WHOLLY CONCENTRATING ON BEING "SPEED MERCHANTS".

SHORT TERM VS. LONG TERM SOLUTIONS

WHILE TWA HAS URGENT NEED FOR ACQUIRING ADDITIONAL JET AIRCRAFT QUICKLY, IT MUST EXERCISE PRUDENCE LEST IT SOLVE ITS SHORT TERM PROBLEM AT THE EXPENSE OF ITS LONG TERM PROFIT OBJECTIVES. FOR EXAMPLE, TWA MIGHT ACQUIRE A SMALL FLEET OF NONSTANDARD AIRCRAFT WHICH WOULD BE MORE EXPENSIVE TO OPERATE THAN IF IT PROCURED STANDARD OR NEAR STANDARD TYPE AIRCRAFT BUT WHICH WOULD STILL BE PROFITABLE FOR THE NEXT YEAR OR SO. HOWEVER, CONTINUING EXTRA COSTS FROM AN UNNECESSARILY DIVERSE FLEET EXTENDED THROUGH THE YEARS COULD FAR OUTWEIGH THE INITIAL ADVANTAGE OF EARLY FLEET DELIVERY.

SIMILARLY, TWA MUST BE CAREFUL TO PROCURE OR LEASE AIRCRAFT WHICH CAN BE SMOOTHLY, EFFICIENTLY AND ECONOMICALLY INTEGRATED INTO TWA OPERATIONS. IN THIS RESPECT, AIRCRAFT BASIC TYPE STANDARDIZATION IS SIGNIFICANT AND IMPORTANT. LEASING RATHER THAN PURCHASING MAY AID THE SHORT TERM SOLUTION INsofar AS USE OF A NONSTANDARD TYPE AIRPLANE IS CONCERNED. THIS COURSE COULD OFFER ADVANTAGES FOR SHORT TERM FLEET USE IF ADEQUATE LEASE TERMINATION RIGHTS WERE OBTAINED. ON THE OTHER HAND, FOR LONG TERM USE IT WOULD PAY TO PURCHASE RATHER THAN LEASE AIRCRAFT OF A REASONABLY COMPATIBLE TYPE IF AT ALL POSSIBLE TO DO SO.

UNFORTUNATELY, SOME OF THE AIRPLANES WHICH MIGHT BE AVAILABLE THE QUICKEST ARE NOT CONFIGURED TO TWA STANDARDS.

REASONABLE ECONOMIC BALANCE BETWEEN SHORT TERM AND LONG TERM SOLUTIONS TO TWA'S EQUIPMENT PROBLEM IS ESSENTIAL. THIS IS RECOGNIZED AND THIS ASPECT IS TREATED MORE FULLY IN A LATER PORTION OF THIS REPORT.

AIRPLANE DESCRIPTIONS

CONVAIR 880 TWA

THE CONVAIR 880 "SUPERJET" IS PRESENTLY BEING INTRODUCED OVER TWA ROUTES. WHEN DELIVERIES ARE COMPLETED, THE FLEET WILL COMPRISE TWENTY AIRPLANES. THE AIRPLANE IS DESIGNED FOR OPERATION AT MEDIUM RANGE SUCH AS ONE OR TWO STOP TRANSCONTINENTAL OPERATION. FOUR ABREAST FIRST CLASS AND FIVE ABREAST TOURIST SEATING IS PROVIDED. ALL FIRST CLASS PASSENGER CAPACITY IS 84 PASSENGERS AND ALL TOURIST CAPACITY IS 105 PASSENGERS. THIS TYPE IS CURRENTLY BEING ADVERTISED AS THE "WORLD'S FASTEST".

CONVAIR 880M CAPITAL

THIS AIRPLANE IS A DERIVATIVE OF THE BASIC 880 AIRPLANE. WITH THE ADDITION OF MORE CENTER WING FUEL TANKS (NOT PRESENTLY INCLUDED) GREATER RANGE IS POSSIBLE. THE AIRPLANE HAS WING LEADING EDGE DEVICES DESIGNED TO PROVIDE IMPROVED TAKEOFF AND LANDING PERFORMANCE. THE ENGINE IS A NON-FAN DERIVATIVE OF THE GENERAL ELECTRIC CJ305 ENGINE NOW INSTALLED ON THE 880 AIRPLANE. THE COCKPIT INSTRUMENTATION IS CONFIGURED TO CAPITAL AIRLINES' REQUIREMENTS AND IS NOT STANDARD WITH THE TWA 880 COCKPIT. THE PASSENGER INTERIOR IS DIFFERENT IN COLOR SCHEME AND IN CONCEPT WHEN COMPARED TO THE TWA 880 ALTHOUGH IT HAS THE SAME SEATING CAPACITY. OTHER SYSTEM DIFFERENCES EXIST. THE 880M IS THE SAME SIZE BUT HEAVIER THAN THE 880.

CONVAIR 990 AMERICAN

THE CONVAIR 990 DESIGN IS DERIVED DIRECTLY FROM THE CONVAIR 880. THE AIRPLANE IS DESIGNED TO ACHIEVE A HIGHER MAXIMUM SPEED THAN THE 880, TO PROVIDE IMPROVED AIRPORT CAPABILITIES AND TO HAVE TRUE TRANSCONTINENTAL NON-STOP HIGH SPEED CAPABILITIES. TO ACCOMPLISH THESE OBJECTIVES, THE AIRPLANE UTILIZES THE GENERAL ELECTRIC TURBOFAN ENGINE, WING LEADING EDGE DEVICES, AND ANTI SHOCK BODIES ON THE WING. THE COCKPIT INSTRUMENTATION IS DESIGNED TO MEET AMERICAN'S REQUIREMENTS AND IS NOT STANDARD WITH THE TWA 880 COCKPIT. IN ADDITION, MAJOR SYSTEM DIFFERENCES EXIST BETWEEN IT AND THE 880 SUCH AS A DIFFERENT AUTOMATIC FLIGHT CONTROL SYSTEM. THE FUSELAGE IS THREE SEAT ROWS LONGER THAN THE 880 GIVING A TWELVE TO FIFTEEN PASSENGER GREATER SEATING CAPABILITY THAN THE 880 OR THE 880M.



CONVAIR 990 TWA

THIS AIRPLANE WOULD BE EQUIVALENT OF THE AMERICAN AIRLINES VERSION EXCEPT THAT THE COCKPIT CONFIGURATION, THE AUTOMATIC FLIGHT CONTROL AND OTHER SYSTEMS WOULD BE IDENTICAL OR NEARLY IDENTICAL TO THE 880 AIRPLANE. IN ADDITION, THE INTERIOR CONFIGURATION WOULD BE LAID OUT TO MEET CURRENT TWA REQUIREMENTS.

BOEING 720B

THIS AIRPLANE IS A DERIVATIVE MODEL OF THE BASIC BOEING JET SERIES. IT DIFFERS FROM THE BASIC TWA MODEL 131 IN THAT IT HAS A THREE SEAT ROW SHORTER FUSELAGE, P & W TURBOFAN ENGINES AND FULL SPAN WING LEADING EDGE DEVICES AND LEADING EDGE GLOVES. IT IS DESIGNED TO OPERATE AT MEDIUM RANGES FROM MEDIUM SIZED AIRPORTS, ALTHOUGH IT ALSO HAS THE ABILITY TO OPERATE AT NON-STOP TRANSCONTINENTAL RANGES IF ADDITIONAL FUEL TANKS ARE INSTALLED. THE SHORTER FUSELAGE LIMITS PASSENGER CAPACITY TO 12 TO 18 LESS PASSENGERS THAN TWA'S 707-131 AIRCRAFT. THIS, LIKE ALL THE BOEING JETS, PROVIDES SPACE FOR SIX WIDE TOURIST SEAT ROWS.

BOEING 131B

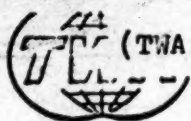
THIS AIRPLANE IS A DERIVATIVE OF TWA'S PRESENT BOEING DOMESTIC SUPERJET. MAJOR DIFFERENCES RESULT FROM THE ADDITION OF P & W TURBOFAN ENGINES AND MODIFICATION OF THE WING INCLUDING FULL SPAN LEADING EDGE DEVICES AND A LEADING EDGE "GLOVE". THESE CHANGES MAKE THE 131B A VERY VERSATILE AIRPLANE HAVING THE CAPABILITY OF TRANSATLANTIC NON-STOP OPERATION AS WELL AS HIGH SPEED DOMESTIC NON-STOP TRANSCONTINENTAL OPERATION. THIS AIRPLANE IS THE SAME SIZE AS THE BOEING 131'S TWA OPERATES IN TRANSCONTINENTAL SERVICE, BUT WOULD HAVE SOMEWHAT HIGHER GROSS WEIGHT.

BOEING 331A-9

THIS AIRPLANE IS ESSENTIALLY IDENTICAL TO THE TWA BOEING INTERCONTINENTAL MODEL 331 SUPERJET. THE SIGNIFICANT CHANGES ARE NEW LANDING GEAR AND BRAKES TO PROVIDE FOR INCREASED MAXIMUM GROSS WEIGHT. TWA'S 331'S CAN BE MODIFIED TO THIS CONFIGURATION.

BOEING 331A-11

THIS AIRPLANE IS ESSENTIALLY THE SAME AS THAT DESCRIBED ABOVE (A-9) EXCEPT THAT THE A-11 ENGINE HAS A HIGHER THRUST RATING PERMITTING IMPROVED AIRPORT PERFORMANCE AND IMPROVED HIGH ALTITUDE HIGH SPEED CAPABILITIES.



BOEING 331B

THIS AIRPLANE IS A DERIVATIVE OF THE TWA BOEING INTERCONTINENTAL SUPERJET. THIS MODEL IS CAPABLE OF VERY LONG RANGE OPERATION SUCH AS LOS ANGELES TO LONDON OR PARIS OR SAN FRANCISCO TO LONDON OR PARIS VIA THE POLAR ROUTE OR ROME-NEW YORK NON-STOP. THE AIRPLANE IS POWERED BY AN ADVANCED VERSION OF THE P & W TURBOFAN ENGINE. STRUCTURAL IMPROVEMENTS PROVIDE HIGHER MAXIMUM TAKEOFF WEIGHTS. THE HIGHER ALLOWABLE GROSS WEIGHT COMBINED WITH THE MORE ECONOMIC OPERATION OF THE TURBOFAN ENGINE PROVIDE THE EXTREME LONG RANGE CAPABILITY. ADDED POWER IMPROVES TAKEOFF PERFORMANCE FROM MARGINAL AIRPORTS SUCH AS LONDON, ENGLAND. THE FUSELAGE IS THE SAME SIZE AS THE MODEL 331 JETS TWA PRESENTLY FLIES IN INTERNATIONAL SERVICE.

BOEING 727

THIS AIRPLANE IS BOEING'S ENTRY IN THE SHORT TO MEDIUM HAUL MARKET. THIS ENTIRELY NEW AIRPLANE HAS BEEN ORDERED IN QUANTITY BY UNITED AND EASTERN AIRLINES. IT IS A TRIMOTOR PLANE WITH ALL THREE ENGINES MOUNTED ON THE REAR OF THE FUSELAGE. THE AIRPLANE UTILIZES HIGH LIFT DEVICES ON THE WING TO PERMIT UNLIMITED OPERATION FROM AIRPORTS SUCH AS LAGUARDIA AND MIDWAY. ITS FUSELAGE DIAMETER IS THE SAME AS THE 707, THUS PERMITTING SIX ABREAST SEATING IN TOURIST CONFIGURATION. ALL FIRST CLASS PASSENGER CAPACITY IS 70 AND ALL TOURIST CAPACITY IS 113.

DOUGLAS CARAVELLE VII

THIS IS A SHORT TO MEDIUM RANGE AIRPLANE DESIGNED BY SUD EST IN FRANCE AND MARKETING BY DOUGLAS IN THE UNITED STATES. IT IS POWERED BY TWO ENGINES MOUNTED IN THE REAR OF THE FUSELAGE. THIS AIRPLANE IS SIMILAR TO THE VERSION OF THE CARAVELLE PRESENTLY FLYING IN EUROPE EXCEPT THAT THE ENGINES ARE GENERAL ELECTRIC TURBOFANS GIVING THE AIRCRAFT IMPROVED AIRPORT AND FLIGHT PERFORMANCE. IT IS CONSIDERABLY SMALLER THAN THE BOEING OR CONVAIR COMMERCIAL JET SERIES SEATING 68 PASSENGERS IN ALL FIRST CLASS SERVICE AND 90 PASSENGERS IN ALL TOURIST CONFIGURATION.

THREE VIEW DRAWINGS, AS WELL AS DETAIL DIMENSIONAL, WEIGHT, CAPACITY AND PERFORMANCE DATA FOR THE AIRCRAFT DISCUSSED ABOVE ARE PROVIDED FOR REFERENCE PURPOSES IN APPENDIX D.

LEASE POSSIBILITIES

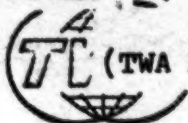
IT WOULD PECULIARLY HELP TWA'S SHORT TERM EQUIPMENT DILEMMA IF TWA COULD QUICKLY LEASE FLIGHT EQUIPMENT OF ESSENTIALLY THE SAME TYPE IT NOW OPERATES FOR EARLY USE. POSSIBILITIES FOR LEASING FLIGHT EQUIPMENT ARE EXTREMELY LIMITED:

1. LEASE A NUMBER OF NORTHEAST AIRLINES CONVAIR 880'S DURING THE SUMMER AND FALL SEASON. SINCE NEA HAS ONLY SIX CONVAIR 880'S, AND IN LIGHT OF JET COMPETITION FROM NATIONAL AIRLINES AND EASTERN AIRLINES, IT IS UNLIKELY THAT NEA MANAGEMENT WILL BE ABLE TO JUSTIFY LEASE OF JETS TO TWA. EVEN IF THE PENDING MERGER SHOULD BE CONSUMMATED SOON, IT IS NOT CLEAR THAT AIRCRAFT COULD BE DIVERTED FROM THE NEA FLORIDA ROUTES THIS SUMMER. HOWEVER, THE MERGER HAS NOT BEEN CONSUMMATED AND EQUIPMENT LEASE DISCUSSIONS ARE UNDERWAY.
2. LEASE UP TO FOUR CONVAIR 880'S FROM THE HUGHES TOOL COMPANY OR FROM CONVAIR, THE SOURCE DEPENDING ON OWNERSHIP. THESE AIRCRAFT, PART OF THE INITIAL 30 ORDERED BY THE HUGHES TOOL COMPANY FROM CONVAIR COULD BE MADE AVAILABLE FROM A MANUFACTURING POINT OF VIEW BY JUNE 30, 1961. THESE AIRCRAFT ARE BEING MANUFACTURED TO TWA'S STANDARD CONFIGURATIONS AND WOULD BE PRODUCTIVE ALMOST UPON DELIVERY. HOWEVER, WHETHER OR NOT A LEASE FROM EITHER PARTY COULD BE CONSUMMATED IS CURRENTLY HIGHLY PROBLEMATIC OR EVEN DOUBTFUL. POSSIBILITIES FOR PURCHASING THESE AIRCRAFT IS DISCUSSED ELSEWHERE.
3. LEASE CONVAIR 880M'S. CONVAIR RECENTLY ADVISED THE HUGHES TOOL COMPANY THAT IT, CONVAIR, RESCINDED THE CONTRACT FOR THE CONSTRUCTION OF SEVEN CONVAIR 880M'S BECAUSE OF ALLEGED COMPLETE LACK OF PERFORMANCE ON THE PART OF THE HUGHES TOOL COMPANY. IT IS UNDERSTOOD THAT THE HUGHES TOOL COMPANY HAS NOT ACCEPTED CONVAIR'S ACT OF CONTRACT RESCISON AS FINAL. WHETHER CONVAIR WOULD BE WILLING TO LEASE 880M'S FOR TWA'S USE IS NOT KNOWN AT THIS WRITING. IT IS SUSPECTED THAT SINCE CONVAIR BELIEVES IT CAN SELL THESE AIRCRAFT SEVERAL TIMES OVER, THAT IT WOULD HAVE NO SUCH INTEREST UNLESS TWA AGREED TO PURCHASE ADDITIONAL AIRCRAFT. THESE AIRCRAFT ARE STILL INCOMPLETE BUT COULD BE MADE AVAILABLE DURING THE JUNE-DECEMBER 1961 PERIOD.

SEVERAL FACTORS MILITATE AGAINST LEASE OF 880M'S:

- A. INHERENT RISK OF DEALING WITH CONVAIR UNDER EXISTING COMPLICATED TERMS OF REFERENCE.
- B. THE 880M'S WERE CONTRACTED TO BE BUILT TO CAPITAL AIRLINES' SPECIFICATIONS. CASH COSTS FOR CONVERSION OF SEVEN AIRCRAFT TO TWA SPECIFICATIONS ARE ESTIMATED TO BE \$1,400,000 AND WOULD DELAY USE APPROXIMATELY TWO MONTHS PER AIRPLANE.

IF THE AIRCRAFT SHOULD NOT BE STANDARDIZED, THE COST FOR ADDITIONAL TRAINING FOR FLIGHT CREWS AND NECESSARY SEGREGATION OF FLIGHT CREWS ARE ESTIMATED TO BE \$600,000 THE FIRST YEAR AND APPROXIMATELY \$470,000 PER RECURRING YEAR. THIS ITEM ALONE TOTALS \$2,480,000 OVER FIVE YEARS. COSTS FOR NON-COMMON SPARES FOR



INITIAL PROVISIONING WOULD BE APPROXIMATELY \$800,000. SPECIAL COSTS FOR PREPARING THESE AIRCRAFT FOR OPERATION IF NOT CONVERTED TO TWA STANDARD CONFIGURATIONS WOULD BE APPROXIMATELY \$240,000.

C. DELIVERY UNCERTAINTY.

POSSIBILITIES OF PURCHASING THESE AIRCRAFT ARE DISCUSSED ELSEWHERE.

4. LEASE OF SIX BOEING 720B's BUILT TO NORTHWEST AIRLINES SPECIFICATIONS.

WHILE BOEING WOULD PREFER TO SELL, IT WOULD PROBABLY BE WILLING TO LEASE THESE AIRCRAFT IF TWA PURCHASED A MINIMUM OF TEN NEW JETS FOR DELIVERY DURING 1962. THESE AIRCRAFT ARE NOT YET FULLY MANUFACTURED AND COULD BE MADE AVAILABLE TO TWA BEGINNING IN AUGUST, PROVIDED TWA CLOSES A DEAL WITH BOEING QUICKLY. TWO CAN BE MADE AVAILABLE IN AUGUST, TWO IN SEPTEMBER AND TWO IN OCTOBER. THESE WOULD BE TURBOFAN AIRCRAFT AND FULLY MODERN AND COMPETITIVE IN EVERY RESPECT. HOWEVER, SPECIAL COSTS TO OPERATE IN THE NWA CONFIGURATION WOULD BE APPROXIMATELY \$1,600,000 FOR PROVISIONING, \$510,000 FOR SPECIAL FLIGHT TRAINING THE FIRST YEAR AND \$400,000 FOR RECURRING YEARS.

5. LEASE OF JET EQUIPMENT FROM OTHER U. S. OR FOREIGN AIRLINES. NO POSSIBILITY IS KNOWN TO EXIST SINCE ALL AIRLINES BELIEVE THEY ARE SHORT OF JET EQUIPMENT EVEN FOR THEIR OFF PEAK SEASONS.

NO SIMPLE LEASE AGREEMENT FOR JET AIRCRAFT IS KNOWN TO BE AVAILABLE. HOWEVER, THE MOST LIKELY PROSPECTS FOR EARLY CONSUMMATION OF AIRCRAFT LEASE AGREEMENTS WOULD BE FROM THE BOEING AEROPLANE COMPANY, BUT ONLY IF TWA AGREED TO PURCHASE ADDITIONAL BOEING JET AIRCRAFT FOR DELIVERY DURING 1962. (TEN IS BELIEVED TO BE THE MINIMUM NUMBER BOEING WOULD ENTERTAIN).

PURCHASE POSSIBILITIES

GENERAL DISCUSSION

PURCHASE POSSIBILITIES CAN BEST BE REFLECTED BY SHOWING DELIVERY DATES FOR AIRCRAFT AVAILABLE FOR PURCHASE. ONLY MANUFACTURERS THAT CAN PRODUCE AIRCRAFT OF A TYPE SUITABLE FOR BOTH SHORT AND LONG TERM CORRECTIVE ACTION ARE CONSIDERED. SUCH MANUFACTURERS ARE:

1. THE BOEING AIRPLANE COMPANY
2. CONVAIR, A DIVISION OF GENERAL DYNAMICS
3. DOUGLAS AIRCRAFT COMPANY (SUD EST OF FRANCE)



THE FOLLOWING FOUR TABLES SHOW AIRPLANE AVAILABILITY BY: MANUFACTURER, AIRPLANE MODEL NUMBER, AIRPLANE CUSTOMER CONFIGURATION, REQUIRED COMMITMENT DATES, AND AIRPLANE DELIVERIES PER MONTH AND CUMULATIVELY.

IF AIRCRAFT ARE NOT PLACED ON FIRM ORDER BY THE COMMITMENT DATES SHOWN, DELIVERY DATES SHOWN CANNOT BE CONSIDERED VALID. UNUSUALLY SHORT LEAD TIMES ARE SHOWN FOR BOTH BOEING AND CONVAIR AIRCRAFT. THIS REFLECTS THE FACT THAT SOME OF THE AIRCRAFT ARE ALREADY UNDER CONSTRUCTION SUCH AS THE CONVAIR 880, 880M, AND 990 TYPES AND THE BOEING 720B TYPE BEING BUILT TO NWA SPECIFICATIONS. SHORT LEAD TIME ALSO REFLECTS THE MANUFACTURERS' INTEREST IN PROVIDING EARLY RELIEF TO TWA'S EQUIPMENT SHORTAGE PROBLEM. THIS APPEARS PARTICULARLY TRUE OF BOEING WHICH SEEMS MOST ANXIOUS TO CAPTURE TWA'S BUSINESS. BOEING IS OFFERING THE SHORTEST LEAD TIME IT HAS EVER OFFERED ANY COMMERCIAL CUSTOMER; HOWEVER, THERE IS LITTLE DOUBT CONCERNING BOEING'S ABILITY TO PRODUCE ON TIME.

IT CANNOT BE ASSUMED THAT ALL AIRCRAFT SHOWN CAN, IN FACT, BE MADE AVAILABLE TO TWA. THIS IS PARTICULARLY TRUE OF CONVAIR SINCE A NUMBER OF THE AIRCRAFT ARE PRESENTLY ON ORDER BY THE HUGHES TOOL COMPANY. FURTHER, THE SIX BOEING 720B'S BEING BUILT TO NWA'S SPECIFICATIONS ARE SPECIFICALLY AVAILABLE SUBJECT TO PRIOR SALE TO CONTINENTAL AIR LINES.

SIMILARLY, ALL UNCOMMITTED AIRPLANE DELIVERY POSITIONS ARE SUBJECT TO PRIOR SALE, ALTHOUGH IT IS EXPECTED BOEING WOULD GIVE TWA THE RIGHT OF FIRST REFUSAL ON ALL EXCEPT THE SIX 720B'S MENTIONED ABOVE.

SIMILARLY, IT CANNOT BE ASSUMED THAT ALL MODELS OF AIRCRAFT CAN BE AVAILABLE SIMULTANEOUSLY ON THE SPECIFIC DELIVERY DATES SHOWN. EACH FLEET CAN BE INDIVIDUALLY, BUT NOT ALL FLEETS, COMBINED. IN THIS RESPECT, THE BOEING AIRPLANE COMPANY IS IN A BETTER POSITION TO DELIVER AIRCRAFT AT A HIGHER MONTHLY RATE THAN EITHER CONVAIR OR DOUGLAS, ALTHOUGH CONVAIR COULD DELIVER EARLIER PROVIDED COMPLICATED INTER-CORPORATE (CONVAIR-HUGHES TOOL CO.-TWA) CONTRACTURAL ASPECTS COULD BE WORKED OUT FAVORABLY.

CONVAIR

CONVAIR'S ABILITY TO DELIVER ON THE DATES SHOWN IS BELIEVED LESS RELIABLE THAN BOEING'S ABILITY TO DELIVER ON THE DATES SHOWN. THIS VIEW IS HELD FOR SEVERAL REASONS:

1. TECHNICAL DESIGN DIFFICULTIES WITH THE MODELS 880M AND 990 THAT REQUIRE REDESIGN AND REDEVELOPMENT. SOLUTIONS TO THESE PROBLEMS ARE NOT CURRENTLY FULLY KNOWN. ON THE OTHER HAND, THE BOEING AIRCRAFT, EXCEPT FOR THE 331B TYPE, ARE ALREADY ENGAGED IN SUCCESSFUL AIRLINE OPERATIONS.
2. CONVAIR'S PRODUCTION PLANNING AND CONTROL ACTIVITIES ARE INADEQUATE AS EVIDENCED BY ITS FAILURE TO MEET MODEL 880 DELIVERY PROMISES TO TWA. IN CONTRAST TO THIS, BOEING HAS PRODUCED 720B'S AND 320'S AT MUCH HIGHER RATES AND ON TIME.
3. CONVAIR'S COMMERCIAL PRODUCTION LINE RESEMBLES A JOB SHOP RATHER THAN PRODUCTION LINE TYPE ACTIVITY. BOEING'S FACTORY IS CLEAN, ORDERLY AND EFFICIENT.

AIRCRAFT DELIVERY DATES

<u>MODEL</u>	<u>CONVAIR</u>									
	880 ^{1/}	880M ^{2/}	990 ^{3/}	990 ^{4/}						
<u>CONFIGURATION</u>	TWA	CAP	AA	TWA						
<u>DELIVERY DATE</u>	<u>5/</u>	<u>PER MONTH</u>	<u>TOTAL</u>	<u>PER MONTH</u>	<u>TOTAL</u>	<u>PER MONTH</u>	<u>TOTAL</u>	<u>PER MONTH</u>	<u>TOTAL</u>	<u>TOTAL</u>
APRIL 1961		1	1							
MAY		3	4							
JUNE				1	1					
JULY				1	2					
AUG.				0	2					
SEPT.				1	3					
OCT.				2	5					
NOV.				1	6					
DEC.				1	7	1	1			
JAN. 1962						3	4			
FEB.						3	7			
MAR.						3	10			
APR.						3	13			
MAY								3	3	
JUNE								3	6	
JULY								3	9	
AUG.								3	12	
SEPT.								3	15	
OCT.								3	18	
NOV.								3	21	
DEC.								3	24	
JAN. 1963								3	27	
FEB.								3	30	

- 1/ THESE AIRCRAFT ARE ON FIRM ORDER BY THE H.T. CO. AND ARE PART OF THE 30 880'S INITIALLY ORDERED FROM CONVAIR. DELIVERY TO TWA BY DATES SHOWN CONTINGENT ON EARLY GO-AHEAD.
- 2/ THESE SHIPS PARTIALLY CONSTRUCTED BUT ARE NOT NOW IN ACTIVE WORK. PRIMARY STRUCTURAL COMPONENTS HAVE BEEN MANUFACTURED AND STORED. THESE AIRCRAFT ARE NOT SOLD. IF BUILT TO TWA'S, RATHER THAN CAP'S, STANDARDS, INITIAL AIRCRAFT DELIVERY WOULD SLIP TO APPROXIMATELY OCTOBER. CONVAIR DOES NOT WISH TO COMPLETE THESE AIRCRAFT TO CAP STANDARDS. DELIVERIES SHOWN BASED ON IMMEDIATE GO-AHEAD.
- 3/ NINE OF THE THIRTEEN AIRCRAFT SHOWN ARE BELIEVED TO BE ON FIRM ORDER. THE REMAINING SEVEN ARE REPORTEDLY BEING BUILT BY CONVAIR UNDER AN ARRANGEMENT WITH THE H.T. CO. WHICH PERMITS CONVAIR TO RECOVER ITS COSTS IN THE EVENT THESE AIRCRAFT ARE NOT PLACED ON FIRM ORDER.
- 4/ THESE DELIVERY POSITIONS ASSUME THAT ALL THIRTEEN 990 AIRCRAFT DISCUSSED IN NOTE 3 WILL BE DELIVERED.
- 5/ ALL DELIVERIES BY MONTH END.

DA 83
(TWA Financial Forecast 1959-61, dated 5/15/59)

AA-1433

TRANS WORLD AIRLINES, INC.
330 Madison Avenue
New York City

DX-3

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FINANCIAL FORECAST

1959 - 1961

CONFIDENTIAL

Prepared by:

Trans World Airlines, Inc.
Finance Department

A. V. Leslie
Sr. Vice President & Treasurer

3787

TRANS WORLD AIRLINES, INC.

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FINANCIAL FORECAST FOR YEARS 1959 - 1961

Basic Forecast Assumptions

I EQUIPMENT

- A. Jet Aircraft - All jet aircraft to be in mixed service. 15 B-707-131's assigned to Domestic; 10 B-707-331's of which two are assigned to Domestic and eight to International; 20 CV-880's assigned to Domestic.
- B. Piston Aircraft - This forecast reflects the retirement of the DC-4's, the 1049A's, the 749/A's, the Martin's and 21 of the 1649A's. Eight 1649A's will be retained in International mixed service; 28 1049C's will be retained in Domestic mixed service; 32 1049's will be retained in Domestic first class service; the four TWA owned 1049H's will be retained in all cargo service.
- C. Leased Aircraft - The five L-1049H leased aircraft will be operated in commercial and MATS charter service for the duration of the current lease agreement. It has been assumed the leases will not be renewed past their termination dates.

II ROUTES

- A. Domestic - It has been assumed there will be no changes in TWA's or its major competitors route structures other than American Airlines will be granted non-stop rights NYC-SFO.
- B. International - It has been assumed there will be no changes in TWA's or its major competitors route structures. Service to Manila, currently suspended, will not be resumed during the forecast period.

III INCOME STATEMENTS

- A. Revenues - It has been assumed there will be no change in domestic fare levels presently in effect. For international, it has been assumed that the present jet surcharges will expire March 31, 1960 and will not be renewed. All other fares will be maintained at present level, however, there will be no berth or sleeper seat service on jet aircraft.

B. Operating Expenses

1. Direct Flying Expenses - In general, expense rates for projecting costs for piston engine aircraft now in service were based on most recent historical experience with the exception of items commented on below. Jet aircraft operating data, on which cost projections were based, was supplied by TWA's Staff Engineering and Maintenance Departments and is the result of their analysis and interpretation of manufacturers estimates for operating jet aircraft on TWA's routes and under TWA's planned operating policies and procedures. In addition, experience of limited commercial operations to date has been taken into account.

- a. Salaries & Wages - Flight crew salary expense was based on rates stipulated in current flight crew contracts plus a percentage increase for contracts now open. (Pilot rates increased 12% for contract expired August 1, 1958.) A contract with the flight engineers was signed July 29, 1958 which extends through 1960 and covers pay rates for operating jet aircraft. All flight crew rates were increased an additional 5% for the year 1961.

Pilots pay for operating jet aircraft was based on a gross pay over that now paid for 1649A operations plus the 12% increase to cover a new contract. The increase for captains was placed at 22% above this adjusted 1649A scale and for co-pilots at 36% above this scale. Furthermore, this higher gross pay is for 75 scheduled hours per month as compared with the present 65 hours per month. In addition a third pilot has been added to Domestic service as well as to International service. The gross salary of the third pilot has been estimated at one third of the combined salaries for the captain and co-pilot on jet aircraft.

Navigators in International service have been retained through 1960. Their contract expires August 31, 1959 and pay scales beyond this period, for both jet and piston equipment, have been assumed at the third pilot rate since historically the navigator's rate has been comparable to that of the junior pilot.

- b. Personnel Expenses - This includes flight crew travel and incidental expenses while on duty away from their domicile. The expense projection was based on actual experience and current contract provisions and no increase in these provisions is anticipated from current negotiations.
- c. Aircraft Rentals - Represents the lease of five L-1049H aircraft at an annual expense of approximately 2.3 million. Leases terminate in the first quarter 1961 and it has been assumed, both in the revenue forecast and for expense purposes, that the leases will not be renewed.

(TWA Financial Forecast 1959-61, dated 5/15/59)

- d. Aircraft Fuel & Oil - Aviation gas and oil expense was based on current prices and experienced fuel consumption by type of aircraft. For 1960 - 1961, the cost per gallon for gasoline was increased approximately 5% to reflect a changed fueling pattern for piston equipment resulting from the introduction of jets into medium haul markets and the downgrading of piston equipment schedules. The average price per gallon for kerosene used in jet aircraft was based on actual bids received by TWA. Jet aircraft fuel consumption, which was based on engineering estimates, is now supported by limited commercial operations.

For the years 1960 and 1961 the average cost per gallon includes an allowance of 3¢ per gallon tax on kerosene consumed in the U.S. (presently not taxed) and an additional 1¢ per gallon tax on gasoline.

- e. Aircraft Hull Insurance - Aircraft hull insurance for each year 1959 - 1961 has been included at the maximum estimated cost to TWA. The years 1960 and 1961 were based on TWA's actual insurance program for 1959 which includes jet aircraft. Non-operating aircraft are insured at reduced values.
- f. Direct Maintenance - Flight Equipment - Direct maintenance expense for piston engine equipment was projected on actual experience hourly cost rates adjusted for certain known and expected changes. The major adjustment was to increase direct labor rates to reflect the full effect of the IAM contract settlement in the latter part of 1958. An additional 5% increase in labor rates has been added for the year 1961.

Direct maintenance expense for jet aircraft and engines was based on cost data worked out with TWA's Maintenance and Engineering Departments. This forecast assumes TWA will not construct a jet engine overhaul base and, instead, will phase in jet engine overhauls at present facilities as piston engine retirements permit. Consequently, a substantial portion of TWA's jet engine overhaul requirements for the forecast period will, necessarily, be contracted out and, the costing of this expense has been computed on this basis.

- g. In-Flight Passenger Service - Hostess and purser salary and travel expense was projected on current experienced cost rates per block hour by type of aircraft. The complement for jet aircraft was increased to four hostesses and/or pursers for both Domestic and International flights.

Passenger food and supplies expense was based on current actual rates per passenger mile depending on the type of aircraft and service proposed.

~~DX 62~~
DX 64

DX 64, page 1
(Letter to Thomas, dated 5/6/59)

(The below appears in someone's handwriting)

Copy of this letter in
report file FF 591

May 6, 1959

Mr. Charles S. Thomas, President
Trans World Airlines, Inc.
380 Madison Avenue
New York, N. Y.

Dear Mr. Thomas:

In accordance with your instructions we have been studying TWA's plan of operation for the year 1961, which year is expected to be the Airline's first full year of operation with its proposed new jet aircraft fleet. This fleet will consist of

15 Boeing 707-331 aircraft
10 Boeing 707-331 aircraft
20 Convair 880 aircraft

We have studied TWA's plans for use of these aircraft including detailed schedules, and we have analyzed the preliminary estimates of revenues and expenses for the year 1961 based on the use of the jet fleet listed above, plus a number of piston aircraft required to supplement the jet fleet; the result of these studies indicates a prospect of good financial accomplishment for that year.

In accordance with the findings of our studies to date, we are of opinion that the proposed jet fleet listed above, which is to be delivered to TWA by the end of 1960, provides a fleet of aircraft in types and numbers adequate for a sound, economic operation.

Respectfully submitted,

Consulting Engineers

bcc: Mr. C. S. Rowe
Chadbourne, Parke, Whiteside & Wolff
25 Broadway
New York

DX 64, page 2
(Letter to Thomas, dated 5/6/59)

copy of this letter
in regard to
the 5961

DX 64

May 6, 1959

Mr. Charles S. Thomas, President
Trans World Airlines, Inc.
330 Madison Avenue
New York, N. Y.

Dear Mr. Thomas:

In accordance with your instructions we have been studying TWA's plan of operation for the year 1961, which year is expected to be the airline's first full year of operation with its proposed new jet aircraft fleet. This fleet will consist of:

15 Boeing 707-320 aircraft
10 Boeing 707-330 aircraft
20 Convair 440 aircraft

We have studied TWA's plans for use of these aircraft including detailed schedules, and we have analyzed the preliminary estimates of revenues and expenses for the year 1961 based on the use of the jet fleet listed above, plus a number of piston aircraft required to supplement the jet fleet; the results of these studies indicates a prospect of good financial accomplishment for that year.

In accordance with the findings of our studies to date, we are of opinion that the proposed jet fleet listed above, which is to be delivered to TWA by the end of 1960, provides a fleet of aircraft in types and numbers adequate for a sound, economic operation.

Respectfully submitted,

Consulting Engineers

cc: Mr. C. S. Thomas
Washington, Parks, Whiteside & Holtz
25 Broadway
New York

(TWA Staff Engineering Report re Jets & Turboprops-4/19/56)

TRANS WORLD AIRLINES, INC.
Staff Engineering

Dist 11/14/62	117A JH
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EVALUATION OF VARIOUS JET AND TURBOPROP TRANSPORTS
IN SHORT HAUL DOMESTIC SERVICE

Staff Engineering Report No. 3-2065

April 19, 1956

PREPARED BY:

R. K. Rourke, Manager - Aircraft Economic Analysis
M. B. Fannon, Supervisor - Aircraft Economic Analysis
D. J. Phelan, Supervisor - Engineering Aerodynamics

APPROVED BY:

R. W. Turner, Vice President - Engineering
R. K. Rourke, Manager - Aircraft Economic Analysis

TRANS WORLD AIRLINES, INC.
Staff Engineering

Page 2

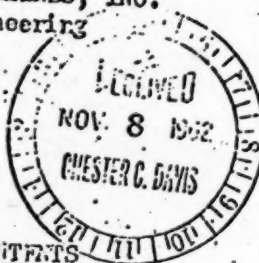


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I
PURPOSE

The purpose of this report is to evaluate the segment performance and economic potential of the Boeing 707-120, 020, Convair Model 22 and Lockheed Electra in domestic medium range service.



II
RECOMMENDATIONS

1. Based on sufficient traffic potential being available for economic load factors, TWA should procure additional 707-120's for internal medium range domestic service.
2. The 707-120's should, however, be procured with C-5 engines to cater to hot day airport performance.
3. Providing traffic is not available for an airplane the size of the Boeing, TWA should procure Convair Model 22.
4. The Electra should be considered only in limited numbers for minimum cost service. If Convair's are procured, the need for Electras is lessened.

III
CONCLUSIONS

1. The Electra airplane cannot compete speedwise with jet transports and would not have as much passenger appeal.
2. The Convair Model 22 has a seat mile cost near enough to the Electra to make it attractive for an airline to acquire the Convair for short haul service in lieu of the Electra. This is particularly true when using more realistic drag estimates for the Convair.
3. The Boeing 120 and 320 have the lowest seat mile cost in short haul service, but their capacity and plane mile cost may be greater than traffic conditions will justify in this type of service.
4. The Boeing 020 is very marginal range and payloadwise as presently configured and not particularly attractive from an economic standpoint.
5. The Convair Model 22 is more flexible in short haul service than the Boeing 120 since it can provide frequency at relatively low cost per trip.
6. From short fields and under hot day conditions, the Convair has better range and payload capability for its operating cost than the Boeing 120 with C-4 wet engines.
7. To make the Boeing 120 usable in internal service, C-5 wet engines will have to be installed. (Such conversion cannot likely be undertaken until late 1960.)
8. The GE-CJ 805 turbojet engine in the Convair M-22 could be operationally more flexible. It is proposed with some deratement thereby suffering less from temperature accountability and it avoids the complexity of water injection.
9. Since TWA has purchased nine B-707 120's, an additional order would permit greater utilization for the entire Boeing fleet, savings in pilot training and maintenance costs.
10. For an equal number of trips between city pairs and considering limited traffic volume, the Electra and then the Convair will produce the revenue with the least cost.

(Toolco-Boeing Contracts-B707-131s, 3/2/56)"

PURCHASE AGREEMENT

Between

BOEING AIRPLANE COMPANY

And

HUGHES TOOL COMPANY

Relating to Boeing 707-120 Series Aircraft
Model 707-131

Dated March 2 , 1956

Agreement No. 7

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3-7-56

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PURCHASE AGREEMENT

Relating to

BOEING 707-120 SERIES AIRCRAFT

MODEL 707-131

THIS AGREEMENT entered into this 2nd day of March, 1956, by and between BOEING AIRPLANE COMPANY, a Delaware corporation, with its principal office in the City of Seattle, State of Washington (hereinafter called Boeing), and HUGHES TOOL COMPANY, a Delaware corporation, with its principal office in the City of Houston, State of Texas (hereinafter called Buyer):

W I T N E S S E T H :

WHEREAS, Buyer desires to obtain by purchase aircraft of the type hereinafter described for the transportation of passengers, mail, express and cargo, and Boeing desires to manufacture and sell the same to Buyer;

NOW, THEREFORE, in consideration of the mutual covenants hereinafter contained, the parties hereto agree as follows:

ARTICLE 1. Subject Matter of Sale.

Boeing shall manufacture, sell and deliver to Buyer, and Buyer shall purchase from Boeing, the following:

- (a) Eight (8) Boeing Model 707-131 Aircraft (hereinafter called

Aircraft) to be manufactured by Boeing in accordance with the terms of this Agreement and the detail specification (hereinafter called Detail Specification) set forth in Exhibit A attached hereto and made a part hereof;

(b) Spare parts for the Aircraft, as more particularly set forth in Article 13 hereof.

ARTICLE 2. Delivery of Aircraft.

(a) Each Aircraft shall be delivered to Buyer assembled and completed ready for flight, and the Buyer shall accept delivery of such Aircraft at a suitable airport in the vicinity of Kansas City, Missouri, or at such other place outside the State of Washington as may be mutually agreed upon by a change order providing for delivery at such other place and for the payment to Boeing by Buyer of Boeing's increased costs, or the payment to Buyer by Boeing of Boeing's decreased costs, if any, occasioned thereby. The Aircraft shall be delivered during or before the months set forth in the following schedule:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
April 1959	1
May 1959	2
June 1959	2
July 1959	2
August 1959	1

(b) In the event Boeing gives Buyer at least seven (7) days' notice that it is ready to deliver any Aircraft hereunder, 10-17

the fault or upon the responsibility of Buyer delivery thereof is delayed, Buyer shall promptly reimburse Boeing for all cost or expense, including without limitation reasonable amounts for storage, insurance, preservation and protection, sustained by Boeing resulting from any such delay in excess of one (1) week.

(c) It is recognized that Boeing does not have maintenance, service and repair facilities and personnel at any airport in the vicinity of Kansas City, Missouri, and is not in a position to perform any maintenance, service or repair work at any such airport. Accordingly, provided the Aircraft is, when dispatched from Seattle, Washington, in condition meeting the requirements of the Detail Specification and this Agreement and in good operating condition, it is agreed that upon the undamaged arrival of an Aircraft at the airport agreed upon for delivery in the vicinity of Kansas City, Missouri, or at any other airport outside the State of Washington which may be agreed upon as the point of delivery, the Aircraft shall be deemed delivered to and accepted by Buyer, and Boeing's sole obligations thereafter as to any repair or correction of defects shall be in accordance with paragraphs (c) through (h) of Article 6 hereof. For the purpose of this paragraph, the term "arrival" shall be deemed to mean the point at which the Aircraft has come to a complete stop and the engines have been turned off.

ARTICLE 3. Price of Aircraft.

(a) The basic price of each Aircraft shall be Four Million Five Hundred Four Thousand Eight Hundred Twenty-six

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(\$4,504,826), increased or decreased on account of price changes specified in Change Orders executed in accordance with Article 10 hereof. No charge for extras will be made unless set forth in a Change Order.

(b) The purchase price of each Aircraft shall be the basic price adjusted as follows:

(1) It shall be increased or decreased by the amount by which the cost to Boeing of the Automatic Pilot included in such Aircraft exceeds or is less than Twenty-Seven Thousand Five Hundred Dollars (\$27,500.00), which Boeing represents was used by Boeing as the cost of such item in arriving at the basic price of the Aircraft. Boeing shall use its best efforts to obtain such item at a price which is reasonable under the circumstances and shall notify Buyer as to the firm price for such item as soon as possible but in any event before March 31, 1956; provided, that in the event such firm price is not available upon the above date, Boeing shall advise Buyer as soon as such price is available.

(11) It shall be decreased by the amount by which Four Million Five Hundred Four Thousand Eight Hundred Twenty-six Dollars (\$4,504,826) exceeds the lowest basic price for which Boeing, at any time before July 1, 1956, may have sold or contracted to sell any complete Boeing passenger model 707-120 series aircraft powered by Pratt & Whitney model JT3 engines (or any other aircraft of a type conforming to the basic engineering design of the Model 707-120 series aircraft except for body length) to any

other purchaser except the United States Government or any agency thereof, after appropriate adjustment for differences between the specification applicable to said aircraft and the Detail Specification applicable to the Aircraft sold hereunder.

(c) At least ten (10) days prior to the delivery date of each Aircraft, Boeing shall give to Buyer a written notice stating the increase or decrease in the basic price of such Aircraft by reason of the operation of the provisions contained in paragraph (b) above, and a summary in such reasonable detail as the Buyer may require of the factors occasioning such increase or decrease.

ARTICLE 4. Taxes.

(a) In addition to the purchase price of the Aircraft and Spare Parts, Buyer shall pay to Boeing, upon demand, any sales or use taxes or the amount of any new or increased gross receipts or excise taxes required to be paid by Boeing as a result of any sale, use (by Buyer after valid tender of delivery), delivery, storage (after valid tender of delivery), or transfer under this Agreement of any of the Aircraft, Spare Parts, services, instructions and data furnished or delivered hereunder.

(b) If claim is made against Boeing for any such tax, Boeing shall promptly notify Buyer. If seasonably requested by Buyer in writing, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct with respect to such asserted liability.

and shall not pay such tax except under protest, if protest is necessary. If payment be made, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct to recover such payment and shall, if requested, permit Buyer in Boeing's name to file claim or commence an action to recover such payment.

ARTICLE 5. Payment.

(a) Advance Payments for Aircraft. Buyer has heretofore paid to Boeing as an advance payment on the Aircraft to be sold and delivered hereunder the sum of One Million Six Hundred Eighty Thousand Dollars (\$1,680,000.00), receipt of which is hereby acknowledged by Boeing, which sum represents five per cent (5%) of the aggregate basic price of Four Million Two Hundred Thousand Dollars (\$4,200,000.00) per Aircraft for eight (8) Boeing Model 707-120 type aircraft. Within ten (10) days after the date of execution of this Purchase Agreement, Buyer shall also pay to Boeing five per cent (5%) of the amount by which the aggregate basic price, computed from the basic price per Aircraft set forth in Article 3(a), exceeds Thirty-three Million Six Hundred Thousand Dollars (\$33,600,000.00). Buyer shall also pay to Boeing as advance payments on the Aircraft to be purchased hereunder, in accordance with the following schedule (each percentage represents an amount equal to that percentage of the aggregate basic price of the Aircraft):

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<u>Due Date of Payment</u>	<u>Amount</u>
July 1, 1956	2%
October 1, 1956	2%
January 1, 1957	3%
April 1, 1957	3%
July 1, 1957	3%
October 1, 1957	3%
January 1, 1958	3%
April 1, 1958	3%
July 1, 1958	3%
October 1, 1958	3%

amounting to a total, including the payments made under the first and second sentences above, or 33% of the aggregate basic price of the Aircraft.

(b) Payment for Aircraft. Upon the delivery of each Aircraft to Buyer hereunder, Buyer shall pay the purchase price thereof as follows: There shall be credited against such purchase price an amount determined by dividing the aggregate of the amounts advanced by Buyer to Boeing under paragraph (a) above less the aggregate amount of such advance payments previously credited against the purchase price of Aircraft delivered hereunder, by the number of Aircraft remaining to be delivered (including the one being delivered), and Buyer shall pay to Boeing the difference between the amount of such credit and the basic price of such Aircraft adjusted pursuant to Article 3(b) hereof.

to the date of delivery of such Aircraft.

(c) Payment in U. S. Funds. All payments hereunder shall be made in lawful money of the United States, to be unconditionally deposited to the account of the party to receive payment in a bank in the United States to be designated by such party, or by such other method as may be mutually agreed upon by Boeing and Buyer.

(d) Repayment of Advance Payments. In any of the following events:

(1) delivery by Boeing to Buyer in accordance with the provisions of this Agreement of all of the Aircraft to be purchased hereunder;

(ii) termination of this Agreement by Buyer under Article 9(b) hereof and the payment to Boeing of all sums determined to be due to Boeing from Buyer pursuant to the provisions of said Article 9(b);

(iii) termination of this Agreement by Boeing under Article 9(b) or 9(c) hereof, or termination of this Agreement by Buyer under Article 9(c) hereof; or

(iv) termination of this Agreement by Buyer under Article 20 hereof as to all Aircraft and Spare Parts then undelivered hereunder;

then, in any such event, Boeing shall forthwith repay to Buyer the entire amount of the advance payments, if any, received by Boeing hereunder, less the aggregate amount of such advance pay-

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ments previously credited against the purchase price of Aircraft theretofore delivered to Buyer hereunder. In the event an Aircraft manufactured by Boeing for sale and delivery under this Purchase Agreement is lost or destroyed or damaged beyond repair and this Agreement is terminated or deemed terminated pursuant to the provisions of Article 22, Boeing shall forthwith repay to Buyer that portion of the advance payments, if any, received by Boeing hereunder which is equal to the ratio that one Aircraft bears to the total Aircraft to be sold and delivered hereunder.

(e) Additional Advance Payments. In addition to the advance payments to be paid under paragraph (a) above and subject to Boeing having a need to borrow funds for use in its operations, Buyer may also, on such terms and conditions as Buyer and Boeing may mutually agree upon, make additional payments to Boeing in advance of the delivery of all or any of the Aircraft to be delivered hereunder, and in such event Boeing shall pay Buyer interest on such additional advance payments from date of payment to date of liquidation at such rate as Buyer and Boeing may mutually agree upon.

ARTICLE 6. Warranty.

(a) Boeing agrees, represents and warrants that the Boeing Model 707 type aircraft will be certificated by the Civil Aeronautics Administration with a Type Certificate and that each Aircraft, prior to and at the time of delivery thereof, will be certificated by the Civil Aeronautics Administration with an

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not terminated.

(e) In the event that Boeing should exercise any right granted by paragraph (b) above to terminate this Agreement and thereafter Boeing completes the manufacture of the Aircraft scheduled to be manufactured for and delivered to Buyer, Boeing agrees that it will not sell such Aircraft to any other customer without first offering for a period of thirty (30) days to sell such Aircraft to Buyer at a price and on terms and conditions not less favorable to Buyer than those on which Boeing is offering to sell Model 707-120 series aircraft to others at that time.

(f) Boeing agrees that it will, to the extent and at the time that it becomes reasonably certain that there will be any material delay in the delivery of Aircraft or the performance of other obligations of Boeing hereunder, give Buyer written notice of the estimated delay.

ARTICLE 10. Changes.

(a) The Detail Specification and other terms and conditions of this Agreement may be amended from time to time by Change Orders in writing, which shall set forth in detail the particular specifications, terms or conditions involved, the changes to be made therein, and the effect, if any, of such changes on design, performance, weight, balance, time of delivery and basic price of the Aircraft or Spare Parts. Change Orders shall not be binding on either party until signed by persons respectively duly authorized in writing by Boeing and Buyer, but upon being so

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signed shall constitute amendments to this Agreement.

(b) The Detail Specification also may be revised by Boeing without Change Order or Buyer's consent, to incorporate development changes where such changes do not adversely affect price, delivery, guaranteed weight or guaranteed performance of the Aircraft or interchangeability or replaceability of Spare Parts. Development changes are those changes of a minor nature deemed necessary to correct defects, improve the Aircraft, prevent delay, or insure compliance with this Agreement but which have no materially adverse effect on the design, weight, balance or functional characteristics of the Aircraft; provided, however, no change shall be made pursuant to this paragraph (b) to any of the equipment listed in Appendix 1 of the Detail Specification. Boeing shall notify Buyer of all changes made in the Detail Specification pursuant to this paragraph (b) by furnishing to Buyer revision insert pages for the Detail Specification.

ARTICLE 11. Mandatory Modifications.

Notwithstanding anything contained in this Agreement, if any law or governmental regulation or interpretation thereof by a governmental agency, the date of promulgation of which is subsequent to the date of this Agreement, shall require any change, addition or modification to the Aircraft prior to delivery thereof in order to obtain certification by the Civil Aeronautics Administration as provided herein, the parties hereto agree that such change, addition or modification shall be made in the Aircraft and Spare Parts affected, and agree to execute a Change

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tioning of the Aircraft and equipment as corrected.

ARTICLE 17. Title to Property and Risks.

(a) Title to and risk of loss of or damage to each Aircraft and Spare Part shall pass from Boeing to Buyer upon delivery thereof but not prior thereto.

(b) Upon the delivery of and the payment for each Aircraft, Boeing shall deliver to Buyer a bill of sale duly vesting in Buyer good title to such Aircraft free and clear of all liens, claims, charges and encumbrances of every kind whatsoever, and such other appropriate documents of title with respect thereto as Buyer may reasonably require.

ARTICLE 18. Resale or Lease.

(a) Buyer may not, prior to delivery to Buyer hereunder, without first obtaining Boeing's written consent, resell, lease, or transfer any Aircraft, or contract so to do, except that:

(1) Buyer may resell or lease any such Aircraft to any of Buyer's subsidiaries or affiliates, or to the United States Government or any agency thereof;

(11) Buyer may, and at Buyer's request Boeing shall, take any action reasonably required for the purpose of causing any Aircraft to be subjected to an equipment trust, conditional sale, lien or other arrangement for the financing by Buyer of the purchase of any such Aircraft; provided, however, that no such action shall subject Boeing to any liability which it would not otherwise be subject to hereunder or modify in any respect Boeing's contract rights.

hereunder or require Boeing to divest itself of title to or possession of any such Aircraft until delivery thereof and payment therefor as provided in this Agreement; and

(111) Buyer may resell or lease any such Aircraft to Trans World Airlines, Inc.

(b) In the event of the resale or lease of any Aircraft as permitted under this Agreement during a period of twenty-four (24) months after delivery thereof, all rights and benefits conferred under this Agreement upon Buyer with respect to such Aircraft shall inure to the benefit of such purchaser or lessee, as the case may be; provided, however, that Buyer shall obtain from such purchaser or lessee an express agreement, in writing, to be bound by and comply with all applicable terms and conditions set forth in Articles 6, 7, 14, 15 and 18 hereof, and Buyer shall promptly furnish to Boeing a true copy of such agreement.

(c) Upon the resale or transfer by Buyer of any of the Aircraft as permitted under this Agreement subsequent to the expiration of twenty-four (24) months after delivery thereof, Buyer shall include in the agreement of sale or transfer express provisions subjecting such purchaser or transferee to all the covenants and conditions and granting the same rights and privileges, subject to the same limitations, as are contained in Article 14.

ARTICLE 19. Plant Representatives of Buyer.

Boeing's construction of Aircraft pursuant to this Agreement, and all materials and parts obtained by Boeing therefor, including

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Boeing's testing thereof, shall at all reasonable times during business hours be open to inspection by any duly authorized representative or representatives of Buyer, except that if access to any portion of Boeing's plant where construction is in progress or materials or parts are stored is restricted by the United States Government or any agency thereof, Boeing shall be allowed a reasonable time to make the items available for inspection elsewhere than in the restricted portion of the plant. Commencing with the effective date of this Agreement and until the delivery of the last Aircraft, Boeing shall furnish, without additional charge, suitable office space and equipment in, or conveniently located with respect to, its plant for the accommodation of up to but not exceeding fifteen (15) personnel of Buyer. Such office space and equipment need not exceed space and equipment for four desks and a secretary's desk at the administrative office and one desk in the factory. All inspections and examinations by Buyer and its representatives shall be performed in such manner as not unduly to delay or hinder the manufacture, construction or performance by Boeing.

ARTICLE 20. Termination for Insolvency.

Either Boeing or Buyer at its option may terminate this Agreement with respect to any or all of the Aircraft, Spare Parts, services, data and items to be furnished hereunder which are undelivered or not furnished on the effective date of such termination, by giving the other party written notice as hereinafter provided at any time after the other files a voluntary petition in bank-

ruptcy, or proceedings in bankruptcy are instituted against the other and it is thereafter adjudicated bankrupt pursuant to such proceedings, or a court takes and retains for a period of at least sixty (60) days jurisdiction of the other and its assets pursuant to proceedings under the provisions of any Federal reorganization act, or the other is adjudged insolvent, or a receiver of the other's assets is appointed on account of insolvency and is not discharged within a period of sixty (60) days thereafter, or the other is otherwise divested of its assets for a period of at least sixty (60) days, or the other makes a general assignment for the benefit of its creditors. Such notice of termination shall be given thirty (30) days prior to the effective date of termination, except that in the case of filing of a voluntary petition in bankruptcy or a voluntary general assignment for the benefit of creditors, such notice need not precede the effective date of termination.

ARTICLE 21. Assignment.

This Agreement shall inure to the benefit of and be binding upon each of the parties hereto and their respective successors and assigns, but it may not be voluntarily assigned, in whole or in part, by either party without the prior written consent of the other party, except that (1) either party's interest shall be assignable through merger, consolidation or reorganization, or voluntary sale or transfer of substantially all of its assets, (2) Boeing may assign any of its fixed or contingent rights to

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receive money hereunder, (3) Buyer may assign any of its rights hereunder to the extent expressly permitted in Article 18, and (4) Buyer may assign all its rights hereunder to Trans World Airlines, Inc.

ARTICLE 22. Loss or Damage of Aircraft.

In the event that prior to delivery thereof to Buyer an Aircraft being manufactured by Boeing for sale and delivery under this Purchase Agreement is lost, destroyed or damaged beyond repair, or damaged to the extent that it cannot be repaired by parts replacement to new condition and delivered in accordance with the delivery schedule set forth in Article 2, the time reasonably required by Boeing to furnish a replacement for such Aircraft or to accomplish such repair thereof shall be deemed an excusable delay under Article 9, provided Boeing promptly gives notice to Buyer of the estimated delay in delivery of the replacement or repaired Aircraft; provided, however, that in the event such Aircraft is lost, destroyed or damaged beyond repair, this Purchase Agreement shall be deemed terminated as to such one Aircraft unless Buyer gives Boeing written notice within thirty (30) days after the date of notification by Boeing of such loss, destruction or damage beyond repair that Buyer desires Boeing to manufacture and deliver to Buyer a replacement for such Aircraft, in which case Boeing shall manufacture and deliver to Buyer at Boeing's earliest uncommitted delivery date one Aircraft to replace the Aircraft so lost, destroyed or damaged beyond repair, and the

TO
PURCHASE AGREEMENT NO. 7 DATED MARCH 2, 1956

BETWEEN
BOEING AIRPLANE COMPANY

AND
HUGHES TOOL COMPANY

RELATING TO BOEING 707-120 SERIES AIRCRAFT
MODEL 707-131

THIS SUPPLEMENTAL AGREEMENT entered into this 19th day of
March, 1956, by and between BOEING AIRPLANE COMPANY, a Delaware
corporation (hereinafter called Boeing), and HUGHES TOOL COMPANY, a
Delaware corporation (hereinafter called Buyer):

WITNESSETH:

WHEREAS, the parties hereto have entered into the agreement described
above, which is hereinafter called "the Purchase Agreement"; and

WHEREAS, the parties desire to amend the Purchase Agreement as
hereinafter provided,

NOW, THEREFORE, in consideration of the mutual covenants herein
contained, the parties hereby agree that the Purchase Agreement is hereby
amended as follows:

1. In paragraph (a) of Article 1, substitute the words and figures "nine
(9)" for the words and figures "eight (8)".
2. In paragraph (a) of Article 2, the schedule for delivery of the aircraft
is hereby revised in its entirety to read as follows:

<u>"Month of Delivery</u>	<u>Quantity of Aircraft</u>
April 1959	2
May 1959	2
June 1959	2
July 1959	2
August 1959	1 "

3. Within ten (10) days after the date of this Supplemental Agreement, Buyer shall pay to Boeing as an advance payment on the additional Aircraft to be sold and delivered under the Purchase Agreement as a result of the execution by the parties of this Supplemental Agreement, the sum of Two Hundred Twenty-Five Thousand Two Hundred Forty-one and 30/100 Dollars (\$225,241.30); provided, however, that any payment made by Buyer to Boeing relating to one Model 707-131 Aircraft pursuant to an exchange of telegrams dated March 16, 1956 from Buyer and March 19, 1956 from Boeing, shall be deemed to be a payment made by Buyer under this paragraph.

4. It is understood and agreed between the parties hereto that the term "Boeing passenger Model 707-120 series aircraft powered by Pratt & Whitney Model JT3 engines (or any other aircraft of a type conforming to the basic engineering design of the Model 707-120 series aircraft except for body length)" as used in subparagraph (ii) of paragraph (b) of Article 3 of the Purchase Agreement shall not be construed to include the Boeing 707 reduced gross weight aircraft designated the "Boeing Model 707-020" series aircraft.

EXECUTED IN DUPLICATE as of the day and year first above written.

BOEING AIRPLANE COMPANY

Witness:

L. A. Peters

By

J. B. Connelly
Vice President

HUGHES TOOL COMPANY

Witness:

Kath Kailing

By

C. H. Price
Vice President

SUPPLEMENTAL AGREEMENT NO. 2

TO

PURCHASE AGREEMENT NO. 7 DATED MARCH 2, 1956

BETWEEN

BOEING AIRPLANE COMPANY

AND

HUGHES TOOL COMPANY

RELATING TO BOEING 707-120 SERIES AIRCRAFT

MODEL 707-131

THIS SUPPLEMENTAL AGREEMENT entered into as of this 28th day of September, 1956, by and between BOEING AIRPLANE COMPANY, a Delaware corporation (hereinafter called Boeing), and HUGHES TOOL COMPANY, a Delaware corporation (hereinafter called Buyer):

W I T N E S S E T H :

WHEREAS, the parties hereto have entered into the agreement described above, which is hereinafter called "the Purchase Agreement"; and

WHEREAS, the parties desire to amend the Purchase Agreement as hereinafter provided,

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the parties hereby agree that the Purchase Agreement is hereby amended as follows:

1. Paragraph (a) of Article 1. is hereby revised in its entirety to read as follows:

"(a) Twelve (12) Boeing Model 707-131 Aircraft (hereinafter called Aircraft) to be manufactured in accordance with the terms of this Agreement and

the detail specification (hereinafter called Detail Specification) set forth in Exhibit A attached hereto and made a part hereof, provided that Buyer shall have the right, by written notice to Boeing delivered prior to twelve (12) midnight Pacific Standard Time, October 29, 1956, to terminate without charge its obligation to purchase one (1) of such Aircraft scheduled to be delivered in August, 1959, as provided in paragraph (a) of Article 2 hereof;"

2. In paragraph (a) of Article 2, the schedule for delivery of the Aircraft is hereby revised in its entirety to read as follows:

<u>"Month of delivery</u>	<u>Quantity of aircraft</u>
April 1959	2
May 1959	2
June 1959	3
July 1959	3
August 1959	2"

3. A new paragraph (d) is added to Article 2, Delivery of Aircraft, as follows:

"(d) Boeing shall deliver, and Buyer shall accept delivery of, one (1) of the Aircraft in December, 1958, notwithstanding that an appropriate Civil Aeronautics Administration type certificate has not then been issued for the Aircraft, for use by Buyer for flight and maintenance training, instruction and related purposes. At the time of such delivery such Aircraft otherwise shall comply with the provisions of Article 6 (b) except for some cabin interior features which may be incomplete. It is intended that such Aircraft shall be one of the Aircraft scheduled for delivery during the month of July 1959, as provided in paragraph (a) of this Article but in any event the delivery schedule set forth in said paragraph (a) shall be retained with respect to the delivery of certificated Aircraft. Boeing further agrees that consistent with its understandings

with other customers as to delivery schedules entered into prior to the signing of this Purchase Agreement it will use its best efforts to accelerate the redelivery of such Aircraft as a certificated Aircraft. Within seven (7) days after delivery to Buyer under this Purchase Agreement of the first certificated Aircraft or the expiration of nine (9) months after delivery of the uncertificated Aircraft under this paragraph whichever first occurs, the uncertificated Aircraft shall be returned to Boeing at a suitable location in the State of Washington designated by Boeing, and Boeing shall promptly incorporate in said Aircraft all of the changes or alterations required to cause said Aircraft at the time of redelivery to Buyer as hereinafter provided to conform to the Detail Specifications and to comply with the requirements of Article 6 (a), all at no cost to Buyer except that (i) the cost of changes required to be made in accordance with the provisions of Article 11 subsequent to delivery of the first certificated Aircraft shall be borne by Buyer and Boeing as therein provided and (ii) Boeing shall have no obligation to make changes or alterations necessitated by wear and tear resulting from Buyer's use; provided however that if such uncertificated Aircraft is returned to Boeing at the expiration of nine (9) months after delivery to Buyer under this paragraph (d), Boeing shall promptly upon such return, provided such Aircraft is then in as good condition as when delivered to Buyer except for reasonable wear and tear resulting from Buyer's use thereof in accordance with the provisions of this paragraph, refund to Buyer that portion of the purchase price paid by Buyer at the time of delivery to Buyer under this paragraph (d) and title to such aircraft shall thereupon revert in Boeing. Upon completion of the work by Boeing as required by the fifth

sentence of this paragraph, Boeing shall promptly redeliver such Aircraft to Buyer at a suitable airport in the State of Washington selected by Boeing and if a portion of the purchase price has been refunded to Buyer under the next preceding sentence, Buyer shall pay to Boeing upon such delivery the balance of the purchase price of such Aircraft then remaining unpaid. Notwithstanding the foregoing provisions of this paragraph (d) in the event Buyer does not desire to return said Aircraft to Boeing for incorporation therein of such changes or alterations, and if Boeing agrees thereto, Boeing will promptly after receipt of Buyer's Purchase Orders therefor, sell and deliver to Buyer without charge to Buyer, all necessary kits of parts to accomplish such changes or alterations to such Aircraft, and will pay to Buyer all reasonable charges for incorporation of such kits of parts in such Aircraft, and in such event said Aircraft shall be deemed for the purposes of this Purchase Agreement to have been delivered in accordance with paragraph (a), hereof, provided that the provisions of this sentence shall not relieve Boeing of its obligation to obtain an Air Worthiness Certificate for said Aircraft as provided in this Purchase Agreement. For the purposes of Article 9 of the Purchase Agreement, the phrase 'calendar month in which delivery is otherwise required hereunder' shall be deemed to be July 1959 with reference to the uncertificated Aircraft to be delivered under this paragraph (d)."

4. The basic price of each aircraft, as set forth in paragraph (a) of Article 3, is changed to Four Million Five Hundred Three Thousand Eight Hundred Seventy Dollars (\$4,503,870).

5. The first two lines of paragraph (b) of Article 5 preceding the colon are amended to read as follows:

"Upon the delivery of each Aircraft to Buyer hereunder (including the

Aircraft to be delivered under paragraph (d) of Article 2 hereof) Buyer shall pay the purchase price thereof as follows."

6. Within ten (10) days after the date of execution of this Supplemental Agreement Buyer shall pay to Boeing as an advance payment on the first two additional Aircraft to be sold and delivered under the Purchase Agreement as a result of the execution by the parties of this Supplemental Agreement, the sum of Eight Hundred Nine Thousand Nine Hundred Twenty-three and 23/100 Dollars (\$809,923.23). In the event that Buyer elects not to exercise its right to terminate its obligation to purchase the third of said additional aircraft, as provided in paragraph (a) of Article 1, Buyer shall pay to Boeing on October 29, 1956, as an advance payment on said third additional Aircraft the sum of Four Hundred Five Thousand Three Hundred Forty-eight and 39/100 Dollars (\$405,348.39). Such advance payment or payments shall constitute an advance payment or payments pursuant to Article 5 (a) of the Purchase Agreement, and shall be in lieu of any advance payment otherwise due with respect to the additional Aircraft covered by this Supplemental Agreement prior to January 1, 1957.

7. Notwithstanding the provisions of paragraph (f) of Article 15 as heretofore amended relating to the dates of delivery of technical data, Boeing will deliver at the earliest practicable time, but in no event later than the date of delivery of the Aircraft called for under paragraph (d) of Article 2, the technical data called for under paragraph (f) of Article 15 (some of which may be in preliminary form) in quantities reasonably required by Buyer in connection with Buyer's use of said Aircraft for the purposes set forth in paragraph (d) of Article 2, provided, however, that the Airplane Flight Manual called for under subparagraph (1) thereof need not have been approved by the Civil Aeronautics Administration at such time.

8. The last sentence of Article 11 is revised to read as follows:

"The cost of making any such change, addition or modification to undelivered Aircraft occasioned by such law, governmental regulation or interpretation thereof, the date of promulgation of which is subsequent to the date of delivery to Buyer of the first Certificated Aircraft, shall be borne equally by Boeing and Buyer."

The parties hereto further agree that by reason of the changes herein made to the Purchase Agreement, paragraph numbered 1. of that certain letter agreement dated March 2, 1956 between Boeing and Buyer, subject: "additional Agreements Relating to Purchase Agreement No. 7" is hereby amended to read as follows:

"1. Delivery. Boeing agrees that prior to the month in which the first certificated Aircraft is delivered to Buyer, Boeing will not have delivered to other commercial customers more than twelve (12) Model 707 type aircraft."

EXECUTED IN DUPLICATE as of the day and year first above written.

BOEING AIRPLANE COMPANY

By

[Signature]

Witness:

[Signature]

HUGHES TOOL COMPANY

By

[Signature]

Witness:

[Signature]

SUPPLEMENTAL AGREEMENT NO. 3

TO

PURCHASE AGREEMENT NO. 7 DATED MARCH 2, 1956

BETWEEN

BOEING AIRPLANE COMPANY

AND

HUGHES TOOL COMPANY

RELATING TO BOEING 707-120 SERIES AIRCRAFT

MODEL 707-131

THIS SUPPLEMENTAL AGREEMENT entered into as of this 10th day of January 1957, by and between BOEING AIRPLANE COMPANY, a Delaware corporation (hereinafter called Boeing), and HUGHES TOOL COMPANY, a Delaware corporation (hereinafter called Buyer):

W I T N E S S E T H :

WHEREAS, the parties hereto have entered into the agreement described above, which is hereinafter called "the Purchase Agreement"; and

WHEREAS, the parties desire to amend the Purchase Agreement as hereinafter provided,

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the parties hereby agree that the Purchase Agreement as heretofore amended, is, hereby further amended as follows:

1. Paragraph (a) of Article 1, is hereby revised in its entirety to read as follows:

"(a) Fifteen (15) Boeing Model 707-131 Aircraft (hereinafter called Aircraft) to be manufactured in accordance with the terms of this

Agreement and the detail specification (hereinafter called Detail Specification) set forth in Exhibit A attached hereto and made a part hereof."

2. In paragraph (a) of Article 2, the schedule for delivery of the Aircraft is hereby revised in its entirety to read as follows:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
April 1959	3
May 1959	4
June 1959	3
July 1959	4
August 1959	1"

3. The basic price of each aircraft, as set forth in paragraph (a) of Article 3. is changed to Four Million Five Hundred Three Thousand Four Hundred Eighty-nine Dollars (\$4,503,489).

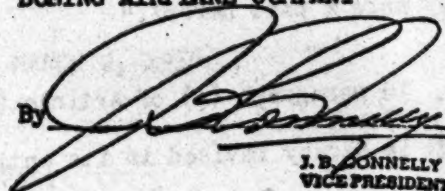
4. Within ten (10) days after the date of execution of this Supplemental Agreement Buyer shall pay to Boeing as an advance payment on the additional Aircraft to be sold and delivered under the Purchase Agreement as a result of the execution by the parties of this Supplemental Agreement, the sum of Two Million One Hundred Sixty-one Thousand One Hundred Seventy and 81/100 Dollars (\$2,161,170.81). Such advance payment shall constitute an advance payment pursuant to Article 5 (a) of the Purchase Agreement, and shall be in lieu of any advance payment otherwise due with respect to the additional Aircraft covered by this Supplemental Agreement prior to April 1, 1957.

EXECUTED IN DUPLICATE as of the day and year first above written.

BOEING AIRPLANE COMPANY

Witness:

By


J.B. CONNELLY
VICE PRESIDENT

Phyllis C. Buge

HUGHES TOOL COMPANY

Witness:

By

C. H. Hume

Raymond M. Steedley

BOEING AIRPLANE COMPANY
TRANSPORT DIVISION
RENTON, WASHINGTON

(1700)
(62)
(62)

January 10, 1957

TELEPHONE: OLIVE 3414

IN REPLY REFER TO

6-1100-20-169

Hughes Tool Company
2200 Gulf Building
Houston, Texas

Attention: Mr. C. H. Price, Vice President
Through: Mr. Edwin Zak, Resident Representative
Subject: Supplemental Agreement No. 3 to
Purchase Agreement No. 7

Gentlemen:

In accordance with the understanding between Mr. Hughes and Mr. Allen in a telephone conversation on January 9, 1957, we have prepared and enclose herewith original, two reproducible copies and twenty-seven ditto copies of Supplemental Agreement No. 3 to Purchase Agreement No. 1, the purpose of which is to increase the number of aircraft to be manufactured and sold thereunder from eleven (11) to fifteen (15).

Paragraph 3. of Supplemental Agreement No. 3 changes the basic price of each aircraft as set forth in paragraph (a) of Article 3 of the Purchase Agreement to \$4,503,489. This amounts to a reduction of \$381 from the basic price as established by Supplemental Agreement No. 2, and is the result of a re-computation of the per-aircraft price of certain additional technical data required by Hughes Tool Company, to reflect the increased number of aircraft. This revised basic price does not, of course, take into account the effect upon price resulting from any Supplemental Agreement or Change Order other than Supplemental Agreements No. 2 and No. 3 and Change Order No. 1. Price changes which may have been made heretofore, or may be made hereafter from time to time, by Change Orders other than Change Order No. 1 will, according to the usual procedure, be taken into account in determining the final purchase price of the aircraft.

You will note that Supplemental Agreement No. 3 calls for payment of an additional advance payment of \$2,161,170.81 within ten (10) days after execution of the Agreement. We have arrived at this figure by multiplying the aggregate basic price for the fifteen (15) aircraft by twelve percent (12%) and deducting advance payments heretofore paid under this Purchase Agreement.

39779 TW-146

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BOEING AIRPLANE COMPANY
TRANSPORT DIVISION
RENTON, WASHINGTON

"DX66, Supp. No. 3, page 5
(Toolco-Boeing Contracts-B707-131s, 1/10/57)"

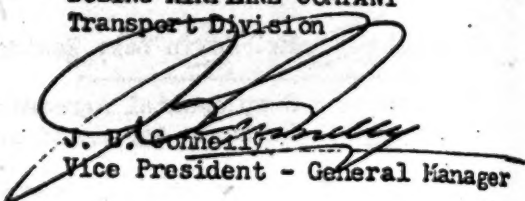
Hughes Tool Company

6-1100-20-169
Page Two

If you find the enclosed Supplemental Agreement to be in order, we would appreciate your executing one (1) copy and returning the same to us on or before January 21, 1957.

Very truly yours,

BOEING AIRPLANE COMPANY
Transport Division


J. D. Connelley
Vice President - General Manager

Enclosure

BOEING AIRPLANE COMPANY
SEATTLE 10, WASHINGTON

March 28, 1956

TELEPHONE MOWAWA 9382

IN REPLY REFER TO

460-0-419

Hughes Tool Company
2200 Gulf Building
Houston 2, Texas

Attention: Mr. C. H. Price
Vice President and Treasurer

Subject: Purchase Agreement No. 7 Dated
March 2, 1956, Between Boeing Airplane
Company and Hughes Tool Company Relating
to the Boeing Model 707-131 Aircraft

Gentlemen:

This will acknowledge receipt of your letter of March 23, 1956, in which you authorize Mr. R. W. Rummel, whose address is 10 Richards Road, Kansas City, Missouri to

- (a) represent Hughes Tool Company and, on its behalf, to conduct all negotiations and execute all change orders regarding specifications and other technical matters in connection with the subject Purchase Agreement, subject to the condition that, without the written approval of an officer of Hughes Tool Company, Mr. Rummel may not execute Change Orders evidencing any single change having a price effect per airplane of more than \$30,000 or evidencing total changes which, in the aggregate, have a net price effect in excess of \$150,000 per airplane, and to
- (b) designate the plant representative who will office at our plant and represent Hughes Tool Company in matters arising here.

Pursuant to your request we will continue to furnish to your Houston office, to the attention of Mr. C. H. Price, copies of all Change Orders to the subject Purchase Agreement regardless of the amount involved.

PRICE

BOEING AIRPLANE COMPANY
SEATTLE 4, WASHINGTON

Hughes Tool Company
March 28, 1956
460-0-419

Page Two

This will also acknowledge receipt of the fully executed duplicate copy of Supplemental Agreement No. 1 dated March 19, 1956, to subject Agreement.

Very truly yours,

BOEING AIRPLANE COMPANY

J. B. Connelley
J. B. Connelley
Vice President

PRICE

PURCHASE AGREEMENT

Between

BOEING AIRPLANE COMPANY

and

HUGHES TOOL COMPANY

Relating to Boeing 707-320 Series Aircraft

Model 707-331

Dated March 19, 1956

Agreement No. 9

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PURCHASE AGREEMENT

Relating to

BOEING 707-320 SERIES AIRCRAFT

MODEL 707-331

THIS AGREEMENT entered into as of the 19th day of March, 1956, by and between BOEING AIRPLANE COMPANY, a Delaware corporation, with its principal office in the City of Seattle, State of Washington (hereinafter called Boeing), and HUGHES TOOL COMPANY, a Delaware corporation, with its principal office in the City of Houston, State of Texas (hereinafter called Buyer):

W I T N E S S E T H :

WHEREAS, Buyer desires to obtain by purchase aircraft of the type hereinafter described for the transportation of passengers, mail, express and cargo, and Boeing desires to manufacture and sell the same to Buyer;

NOW, THEREFORE, in consideration of the mutual covenants hereinafter contained, the parties hereto agree as follows:

ARTICLE 1. Subject Matter of Sale.

Boeing shall manufacture, sell and deliver to Buyer, and Buyer shall purchase from Boeing, the following:

- (a) Eighteen (18) Boeing Model 707-331 Aircraft (hereinafter

called Aircraft) to be manufactured by Boeing in accordance with the terms of this Agreement and the detail specification (hereinafter called Detail Specification) set forth in Exhibit A attached hereto and made a part hereof;

(b) Spare parts for the Aircraft, as more particularly set forth in Article 13 hereof.

ARTICLE 2. Delivery of Aircraft.

(a) Each Aircraft shall be delivered to Buyer assembled and completed ready for flight, and the Buyer shall accept delivery of such Aircraft at a suitable airport in the vicinity of Kansas City, Missouri, or at such other place outside the State of Washington as may be mutually agreed upon by a change order providing for delivery at such other place and for the payment to Boeing by Buyer of Boeing's increased costs, or the payment to Buyer by Boeing of Boeing's decreased costs, if any, occasioned thereby. The Aircraft shall be delivered during or before the months set forth in the following schedule:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
November 1959	1
December 1959	2 /
January 1960	1
February 1960	2 /
March 1960	2 /
April 1960	3 /
May 1960	3 /
June 1960	4 /

(b) In the event Boeing gives Buyer at least seven (7) days' notice that it is ready to deliver any Aircraft hereunder, and at the fault or upon the responsibility of Buyer delivery thereof is delayed, Buyer shall promptly reimburse Boeing for all cost or expense, including without limitation reasonable amounts for storage, insurance, preservation and protection, sustained by Boeing resulting from any such delay in excess of one (1) week.

(c) It is recognized that Boeing does not have maintenance, service and repair facilities and personnel at any airport in the vicinity of Kansas City, Missouri, and is not in a position to perform any maintenance, service or repair work at any such airport. Accordingly, provided the Aircraft is, when dispatched from Seattle, Washington, in condition meeting the requirements of the Detail Specification and this Agreement and in good operating condition, it is agreed that upon the undamaged arrival of an Aircraft at the airport agreed upon for delivery in the vicinity of Kansas City, Missouri, or at any other airport outside the State of Washington which may be agreed upon as the point of delivery, the Aircraft shall be deemed delivered to and accepted by Buyer, and Boeing's sole obligations thereafter as to any repair or correction of defects shall be in accordance with paragraphs (c) through (h) of Article 6 hereof. For the purpose of this paragraph, the term "arrival" shall be deemed to mean the point at which the Aircraft has come to a complete stop and the engines have been turned off.

ARTICLE 3. Price of Aircraft.

(a) The basic price of each Aircraft shall be Five Million, Three

Hundred Fifteen Thousand, Eight Hundred and Forty-Six Dollars (\$5,315,846), increased or decreased on account of price changes specified in Change Orders executed in accordance with Article 10 hereof. No charge for extras will be made unless set forth in a Change Order.

(b) The purchase price of each Aircraft shall be the basic price adjusted as follows:

(1) It shall be increased or decreased by the amount by which the cost to Boeing of the automatic pilot included in such Aircraft exceeds or is less than Twenty-seven Thousand Five Hundred Dollars (\$27,500), which Boeing represents was used by Boeing as the cost of such item in arriving at the basic price of the Aircraft. Boeing shall use its best efforts to obtain such item at a price which is reasonable under the circumstances and shall notify Buyer as to the firm price for such item as soon as possible.

(11) It shall be decreased by the amount by which Five Thousand Three Hundred Fifteen Thousand, Eight Hundred and Forty-Six Dollars (\$5,315,846) exceeds the lowest basic price for which Boeing, at any time before July 1, 1956, may have sold or contracted to sell any complete Boeing passenger model 707-320 series aircraft powered by Pratt & Whitney model JT4 engines (or any other aircraft of a type conforming to the basic engineering design of the Model 707-320 series aircraft except for body length powered by such engines) to any other pur-

chaser, except the United States Government or any agency thereof, after appropriate adjustment for differences between the specification applicable to said aircraft and the Detail Specification applicable to the Aircraft sold hereunder.

(c) At least ten (10) days prior to the delivery date of each Aircraft, Boeing shall give to Buyer a written notice stating the increase or decrease in the basic price of such Aircraft by reason of the operation of the provisions contained in paragraph (b) above, and a summary in such reasonable detail as the Buyer may require of the factors occasioning such increase or decrease.

ARTICLE 4. Taxes.

(a) In addition to the purchase price of the Aircraft and Spare Parts, Buyer shall pay to Boeing, upon demand, any sales or use taxes or the amount of any new or increased gross receipts or excise taxes required to be paid by Boeing as a result of any sale, use (by Buyer after valid tender of delivery), delivery, storage (after valid tender of delivery), or transfer under this Agreement of any of the Aircraft, Spare Parts, services, instructions and data furnished or delivered hereunder.

(b) If claim is made against Boeing for any such tax, Boeing shall promptly notify Buyer. If seasonably requested by Buyer in writing, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct with respect to such asserted liability

and shall not pay such tax except under protest, if protest is necessary. If payment be made, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct to recover such payment and shall, if requested, permit Buyer in Boeing's name to file claim or commence an action to recover such payment.

ARTICLE 5. Payment.

(a) Advance Payments for Aircraft. Buyer has heretofore paid to Boeing as an advance payment on the Aircraft to be sold and delivered hereunder the sum of Four Million Six Hundred Thirty-five Thousand Dollars (\$4,635,000), receipt of which is hereby acknowledged by Boeing, which sum represents five percent (5%) of an assumed aggregate basic price of Ninety-two Million Seven Hundred Thousand Dollars (\$92,700,000) for eighteen (18) Boeing Model 707-320 type aircraft. Within ten (10) days after the date of the signing of this Purchase Agreement, Buyer shall also pay to Boeing five percent (5%) of the amount by which the aggregate basic price, computed from the basic price per Aircraft set forth in Article 3(a), exceeds Ninety-two Million Seven Hundred Thousand Dollars (\$92,700,000). Buyer shall also pay to Boeing as advance payments on the Aircraft to be purchased hereunder, in accordance with the following schedule (each percentage represents an amount equal to that percentage of the aggregate basic price of the Aircraft):

<u>Due Date of Payment</u>	<u>Amount</u>
July 1, 1956	2%
October 1, 1956	2%
January 1, 1957	3%
April 1, 1957	3%
July 1, 1957	3%
October 1, 1957	3%
January 1, 1958	3%
April 1, 1958	3%
July 1, 1958	3%
October 1, 1958	3%

amounting to a total, including the payments made under the first and second sentences above, of 33% of the aggregate basic price of the Aircraft.

(b) Payment for Aircraft. Upon the delivery of each Aircraft to Buyer hereunder, Buyer shall pay the purchase price thereof as follows: There shall be credited against such purchase price an amount determined by dividing the aggregate of the amounts advanced by Buyer to Boeing under paragraph (a) above less the aggregate amount of such advance payments previously credited against the purchase price of Aircraft delivered hereunder, by the number of Aircraft remaining to be delivered (including the one being delivered), and Buyer shall pay to Boeing the difference between the amount of such credit and the basic price of such Aircraft adjusted pursuant to Article 3(b) hereof

to the date of delivery of such Aircraft.

(c) Payment in U. S. Funds. All payments hereunder shall be made in lawful money of the United States, to be unconditionally deposited to the account of the party to receive payment in a bank in the United States to be designated by such party, or by such other method as may be mutually agreed upon by Boeing and Buyer.

(d) Repayment of Advance Payments. In any of the following events:

(i) delivery by Boeing to Buyer in accordance with the provisions of this Agreement of all of the Aircraft to be purchased hereunder;

(ii) termination of this Agreement by Buyer under Article 9(b) hereof and the payment to Boeing of all sums determined to be due to Boeing from Buyer pursuant to the provisions of said Article 9(b);

(iii) termination of this Agreement by Boeing under Article 9(b) or 9(c) hereof, or termination of this Agreement by Buyer under Article 9(c) hereof; or

(iv) termination of this Agreement by Buyer under Article 20 hereof as to all Aircraft and Spare Parts then undelivered hereunder;

then, in any such event, Boeing shall forthwith repay to Buyer the entire amount of the advance payments, if any, received by Boeing hereunder, less the aggregate amount of such advance pay-

ments previously credited against the purchase price of Aircraft theretofore delivered to Buyer hereunder. In the event an Aircraft manufactured by Boeing for sale and delivery under this Purchase Agreement is lost or destroyed or damaged beyond repair and this Agreement is terminated or deemed terminated pursuant to the provisions of Article 22, Boeing shall forthwith repay to Buyer that portion of the advance payments, if any, received by Boeing hereunder which is equal to the ratio that one Aircraft bears to the total Aircraft to be sold and delivered hereunder.

(e) Additional Advance Payments. In addition to the advance payments to be paid under paragraph (a) above and subject to Boeing having a need to borrow funds for use in its operations, Buyer may also, on such terms and conditions as Buyer and Boeing may mutually agree upon, make additional payments to Boeing in advance of the delivery of all or any of the Aircraft to be delivered hereunder, and in such event Boeing shall pay Buyer interest on such additional advance payments from date of payment to date of liquidation at such rate as Buyer and Boeing may mutually agree upon.

ARTICLE 6. Warranty.

(a) Boeing agrees, represents and warrants that the Boeing Model 707 type aircraft will be certificated by the Civil Aeronautics Administration with a Type Certificate and that each Aircraft, prior to and at the time of delivery thereof, will be certificated by the Civil Aeronautics Administration with an

not terminated.

(e) In the event that Boeing should exercise any right granted by paragraph (b) above to terminate this Agreement and thereafter Boeing completes the manufacture of the Aircraft scheduled to be manufactured for and delivered to Buyer, Boeing agrees that it will not sell such Aircraft to any other customer without first offering for a period of thirty (30) days to sell such Aircraft to Buyer at a price and on terms and conditions not less favorable to Buyer than those on which Boeing is offering to sell Model 707-320 series aircraft to others at that time.

(f) Boeing agrees that it will, to the extent and at the time that it becomes reasonably certain that there will be any material delay in the delivery of Aircraft or the performance of other obligations of Boeing hereunder, give Buyer written notice of the estimated delay.

ARTICLE 10. Changes.

(a) The Detail Specification and other terms and conditions of this Agreement may be amended from time to time by Change Orders in writing, which shall set forth in detail the particular specifications, terms or conditions involved, the changes to be made therein, and the effect, if any, of such changes on design, performance, weight, balance, time of delivery and basic price of the Aircraft or Spare Parts. Change Orders shall not be binding on either party until signed by persons respectively duly authorized in writing by Boeing and Buyer, but upon being so

signed shall constitute amendments to this Agreement.

(b) The Detail Specification also may be revised by Boeing without Change Order or Buyer's consent to incorporate development changes where such changes do not adversely affect price, delivery, guaranteed weight or guaranteed performance of the Aircraft or interchangeability or replaceability of Spare Parts. Development changes are those changes of a minor nature deemed necessary to correct defects, improve the Aircraft, prevent delay, or insure compliance with this Agreement but which have no materially adverse effect on the design, weight, balance or functional characteristics of the Aircraft; provided, however, no change shall be made pursuant to this paragraph (b) to any of the equipment listed in Appendix 1 of the Detail Specification. Boeing shall notify Buyer of all changes made in the Detail Specification pursuant to this paragraph (b) by furnishing to Buyer revision insert pages for the Detail Specification.

ARTICLE 11. Mandatory Modifications.

Notwithstanding anything contained in this Agreement, if any law or governmental regulation or interpretation thereof by a governmental agency, the date of promulgation of which is subsequent to the date of this Agreement, shall require any change, addition or modification to the Aircraft prior to delivery thereof in order to obtain certification by the Civil Aeronautics Administration as provided herein, the parties hereto agree that such change, addition or modification shall be made in the Air-

lities, damages, losses and judgments which may be suffered by, accrue against, be charged to or recoverable from Buyer and/or any of Buyer's observers, by reason of loss of or damage to property, or by reason of injury to or death of any person other than an officer, agent or employee of Buyer, arising out of or in connection with the operation of the Aircraft during all tests and flights thereof conducted under either Article 15 or Article 16 prior to delivery. Buyer shall fully protect and indemnify Boeing against all liability arising from injury to or death of Buyer's observers during each such flight; provided, however, the foregoing indemnity shall be applicable only to the extent of any liability not covered by or in excess of such valid and collectible insurance as Boeing may have in effect at the time such liability arises.

(e) If during any flight test herein required any Aircraft fails to comply with the Detail Specification and the performance guarantees therein set forth, or if during any flight test any Aircraft or any accessory, equipment or part thereof fails to function properly, Boeing promptly and without charge to Buyer shall correct or cause the correction of any such defects and deficiencies involved and shall conduct such supplemental flight testing as may be necessary to demonstrate the satisfactory functioning of the Aircraft and equipment as corrected.

ARTICLE 17. Title to Property and Risks.

(a) Title to and risk of loss of or damage to each Aircraft

and Spare Part shall pass from Boeing to Buyer upon delivery thereof but not prior thereto.

(b) Upon the delivery of and the payment for each Aircraft, Boeing shall deliver to Buyer a bill of sale duly vesting in Buyer good title to such Aircraft free and clear of all liens, claims, charges and encumbrances of every kind whatsoever, and such other appropriate documents of title with respect thereto as Buyer may reasonably require.

ARTICLE 18. Resale or Lease.

(a) Buyer may not, prior to delivery to Buyer hereunder, without first obtaining Boeing's written consent, resell, lease or transfer any Aircraft, or contract so to do, except that:

(1) Buyer may resell or lease any such Aircraft to any of Buyer's subsidiaries or affiliates, or to the United States Government or any agency thereof;

(11) Buyer may, and at Buyer's request Boeing shall, take any action reasonably required for the purpose of causing any Aircraft to be subjected to an equipment trust, conditional sale, lien or other arrangement for the financing by Buyer of the purchase of any such Aircraft; provided, however, that no such action shall subject Boeing to any liability which it would not otherwise be subject to hereunder or modify in any respect Boeing's contract rights hereunder or require Boeing to divest itself of title to or possession of any such Aircraft until delivery thereof

and payment therefor as provided in this Agreement; and

(iii) Buyer may resell or lease any such Aircraft to Trans World Airlines, Inc.

(b) In the event of the resale or lease of any Aircraft as permitted under this Agreement during a period of twenty-four (24) months after delivery thereof, all rights and benefits conferred under this Agreement upon Buyer with respect to such Aircraft shall inure to the benefit of such purchaser or lessee, as the case may be; provided, however, that Buyer shall obtain from such purchaser or lessee an express agreement, in writing, to be bound by and comply with all applicable terms and conditions set forth in Articles 6, 7, 14, 15 and 18 hereof, and Buyer shall promptly furnish to Boeing a true copy of such agreement.

(c) Upon the resale or transfer by Buyer of any of the Aircraft as permitted under this Agreement subsequent to the expiration of twenty-four (24) months after delivery thereof, Buyer shall include in the agreement of sale or transfer express provisions subjecting such purchaser or transferee to all the covenants and conditions and granting the same rights and privileges, subject to the same limitations, as are contained in Article 14.

ARTICLE 19. Plant Representatives of Buyer.

Boeing's construction of Aircraft pursuant to this Agreement, and all materials and parts obtained by Boeing therefor, including Boeing's testing thereof, shall at all reasonable times during business hours be open to inspection by any duly authorized rep-

representative or representatives of Buyer, except that if access to any portion of Boeing's plant where construction is in progress or materials or parts are stored is restricted by the United States Government or any agency thereof, Boeing shall be allowed a reasonable time to make the items available for inspection elsewhere than in the restricted portion of the plant. Commencing with the effective date of this Agreement and until the delivery of the last Aircraft, Boeing shall furnish, without additional charge, suitable office space and equipment in, or conveniently located with respect to, its plant for the accommodation of up to but not exceeding twenty (20) personnel of Buyer, including personnel of Buyer referred to in Article 19 of Purchase Agreement No. 7. Such office space and equipment need not exceed space and equipment for four desks and a secretary's desk at the administrative office and one desk in the factory. All inspections and examinations by Buyer and its representatives shall be performed in such manner as not unduly to delay or hinder the manufacture, construction or performance by Boeing. The office space and equipment to be furnished by Boeing hereunder may be the same office space and equipment furnished by Boeing under Purchase Agreement No. 7 and need not be in addition to the office space and equipment furnished under that agreement.

ARTICLE 20. Termination for Insolvency.

Either Boeing or Buyer at its option may terminate this Agreement with respect to any or all of the Aircraft, Spare Parts, services, data and items to be furnished hereunder which are undeli-

vered or not furnished on the effective date of such termination, by giving the other party written notice as hereinafter provided at any time after the other files a voluntary petition in bankruptcy, or proceedings in bankruptcy are instituted against the other and it is thereafter adjudicated bankrupt pursuant to such proceedings, or a court takes and retains for a period of at least sixty (60) days jurisdiction of the other and its assets pursuant to proceedings under the provisions of any Federal reorganization act, or the other is adjudged insolvent, or a receiver of the other's assets is appointed on account of insolvency and is not discharged within a period of sixty (60) days thereafter, or the other is otherwise divested of its assets for a period of at least sixty (60) days, or the other makes a general assignment for the benefit of its creditors. Such notice of termination shall be given thirty (30) days prior to the effective date of termination, except that in the case of filing of a voluntary petition in bankruptcy or a voluntary general assignment for the benefit of creditors, such notice need not precede the effective date of termination.

ARTICLE 21. Assignment.

This Agreement shall inure to the benefit of and be binding upon each of the parties hereto and their respective successors and assigns, but it may not be voluntarily assigned, in whole or in part, by either party without the prior written consent of the other party, except that (i) either party's interest shall be

assignable through merger, consolidation or reorganization, or voluntary sale or transfer of substantially all of its assets, (2) Boeing may assign any of its fixed or contingent rights to receive money hereunder, (3) Buyer may assign any of its rights hereunder to the extent expressly permitted in Article 18, and (4) Buyer may assign all its rights hereunder to Trans World Airlines, Inc.

ARTICLE 22. Loss or Damage of Aircraft.

In the event that prior to delivery thereof to Buyer an Aircraft being manufactured by Boeing for sale and delivery under this Purchase Agreement is lost, destroyed or damaged beyond repair, or damaged to the extent that it cannot be repaired by parts replacement to new condition and delivered in accordance with the delivery schedule set forth in Article 2, the time reasonably required by Boeing to furnish a replacement for such Aircraft or to accomplish such repair thereof shall be deemed an excusable delay under Article 9, provided Boeing promptly gives notice to Buyer of the estimated delay in delivery of the replacement or repaired Aircraft; provided, however, that in the event such Aircraft is lost, destroyed or damaged beyond repair, this Purchase Agreement shall be deemed terminated as to such one Aircraft unless Buyer gives Boeing written notice within thirty (30) days after the date of notification by Boeing of such loss, destruction or damage beyond repair that Buyer desires Boeing to manufacture and deliver to Buyer a replacement for such Aircraft, in

SUPPLEMENTAL AGREEMENT NO. 5

TO

PURCHASE AGREEMENT NO. 9 DATED MARCH 19, 1956

BETWEEN

BOEING AIRPLANE COMPANY

AND

HUGHES TOOL COMPANY

RELATING TO BOEING MODEL 707-331 AIRCRAFT

THIS SUPPLEMENTAL AGREEMENT entered into as of this 3rd day of September, 1959 by and between BOEING AIRPLANE COMPANY, a Delaware corporation (hereinafter called Boeing), and HUGHES TOOL COMPANY, a Delaware corporation (hereinafter called Buyer):

W I T N E S S E T H.

WHEREAS, the parties hereto have entered into an agreement dated March 19, 1956, providing for the manufacture and sale by Boeing to Buyer of eighteen (18) Model 707-331 aircraft (which agreement as heretofore supplemented and amended is hereinafter called the "Purchase Agreement"); and

WHEREAS, on June 25, 1959, Buyer assigned, subject to Boeing's consent, six (6) of such aircraft to PAN AMERICAN WORLD AIRWAYS, INC., a New York corporation; and

WHEREAS, on July 22, 1959, Boeing granted its consent to said assignment and released Buyer from all of Buyer's obligations under the Purchase Agreement with respect to the six (6) aircraft so assigned; and

WHEREAS, the parties now desire to amend the Purchase Agreement to provide for the reduction of the number of aircraft subject to such agreement from eighteen (18) to twelve (12), and desire to further amend the Purchase Agreement as hereinafter provided;

AND, THEREFORE, in consideration of the mutual covenants herein contained, the parties agree as follows:

1. Paragraph (a) of Article 1 of the Purchase Agreement is hereby revised in its entirety to read as follows:

"(a) Twelve (12) Boeing Model 707-331 aircraft (hereinafter called Aircraft) to be manufactured by Boeing in accordance with the terms of this Agreement and the detail specification (hereinafter called Detail Specification) set forth in Exhibit A attached hereto and made a part hereof;"

2. The delivery schedule set forth in paragraph (a) of Article 2 of the Purchase Agreement is hereby revised to read as follows:

<u>"Month of Delivery"</u>	<u>Quantity of Aircraft</u>
November 1959	1
December 1959	1
January 1960	1
February 1960	1
March 1960	1
April 1960	2
May 1960	2
June 1960	3"

3. Paragraph (c) of Article 15 of the Purchase Agreement is amended by changing the number of hours referred to therein from twenty (20) to thirteen (13).

4. Paragraph (c) of Article 16 of the Purchase Agreement is amended by changing the number of Aircraft referred to therein from two (2) to one (1), and by changing the number of hours referred to therein from twenty (20) to thirteen (13).

EXECUTED IN DUPLICATE as of the day and year first above written:

BOEING AIR-LANE COMPANY

By Original signed by T. L. Spalding
Its Manager of Contract Administration

Witness:

HUGHES TOOL COMPANY

By _____

Its _____

Witness:

NOTE: DAC submitted Supplemental Agreement No. 5 directly to H. T. Co. for their handling.

FH1 STRAIGHT HOUTOXX HOUSTON, TEXAS MARCH 16, 1956

WILLIAM M. ALLEN, PRES.,

BOEING AIRLXXXX AIRPLANE COMPANY,

7755 EAST MARGINAL WAY,

SEATTLE 14, WASHINGTON

CONFIDETXXXXX CONFIDENTIAL. CONFIRMING THE OFFER MADE TO YOU ON
BEHALF ON THE HUGHES TOOL COMPANY BY OUR MR. HUGHES IN A TELEPHONE
CONVERSATION YESTERDAY, HUGHES TOOL COMPANY HEREBY MAKES THE
FOLLOWING FIRM OFFERS:

(A) TO PURCHASE FROM BOEING AIRPLANT COMPANY ONE ADDITIONAL MODEL
707-131 AIRPLANE FOR THE SAME UNIT PRICE AND UPON THE SAME TERMS
AS SET FORTH IN THE PURCHASE AGREEMENT DATED MARCH 2, 1956 AND THE
SUPPLEMENTAL SIDE LETTER RELATING THERETO DATED MARCH 2, 1956, 3XXXX
EXCEPT THAT THE SAID ADDITIONAL AIRPLANE WILL BE DELIVERED IN APRIL,
1959; AND,

(B) TO PURCHASE FROM BOEING AIRPLANT COMPANY EIGHXXXXX EIGHTEEN
MODEL 707-320 AIRPLANES FOR THE SAME UNIT PRICE AND UPON THE SAME
TERMS AS STXXXX SET FORTH IN THE WRITTEN PROPOSAL DATED JANUARY
6, 1956, FROM BOEING AIRPLANE COMPANY TO SELL, TONXXXX TO HUGHES
TOOL COMPANY TWENTY-TWO MODEL 707-320 AIRPLANES, EXCEPT THAT ONLY
EIGHTEEN AIRPLANES ARE TO BE PURCHASED, AND THESE UPON THE DELIVERY
SCHEDULE PXXXXX SPECIFIED IN THE TELEHXXXX TELEPHONE CONVERSATION
YESTERDAY, RESULTING IN DELIVERIES OF ALL EIGHTEEN AIRPLANES BY THE
END OF JUNE 1960; AND EXCEPT THAT THERE SHALL BE NO CONDITION
SUBSEQUENT FOR NOT REACHING AN AGREEMENT WITH UNITED AIRCRAFT
CORPORATION AND FURTHER THAT THE DATE FOR OUR REACHING A DEFINITIVE

AX-1502 / -NT FOR NOT REACHING AN AGREEMENT

EXPLANATION AND FURTHER THAT (Toolco-Boeing Contracts-B707-331s, 3/16-3/19/56) DX67, Telegrams, page 2

AGREEMENT WITH BOEING AIRPLANE COMPANY SUPERSEEDING THIS PROPOSAL
SHALL BE APRIL 15, 1956. FUNDS IN THE AMOUNT OF \$4,860,241.30 WILL
BE MADE AVAILABLE TO YOU TODAY FOR OUR ACCOUNT, ~~XXXXXXXX~~ REPRESENTING
THE FIVE PER-CENT DOWN PAYMENT ON THE PURCHASE PRICE OF THESE
NINETEEN AIRPLANES.

PLEASE ADVISE YOUR ACCEPTANCE OF THIS OFFER BY TELEGRAM OR LETTER
TRANSMITTED TO HUGHES TOOL COMPANY, ATTENTION C. H. PRICE, V. PRES.
2200 GULF BUILDING, HOUSTON, TEXAS.

HUGHES TOOL~~XXXXX~~ TOOL COMPANY
BY C. H. PRICE, VICE PRESIDENT

CONF 707-131 MARCH 2, 1956 MARCH 2, 1956 1959
707-320 JANUARY 6, 1956 707-320 JUHXXX JUNE 1960
APRIL 15, 1956 \$4,860,241.30

CA DIS

IN TWO PLACES IN ABOVE MSG WHERE SAYS "BOEING AIRPLANT COMPANY" PLS
CHANGE TO READ "BOEING AIRPLANE COMPANY" CA

JUST A MIN OK THANK U

YR FIG ON LAST PAGE RDS \$4'860'241.30 CANT READ IT
YO XX YOU SHOW APOSTROPHES NXXX INSTEAD OF COMMAS N XXX IN THIS
FIGURE. CORRECT FIGURE IS \$4,860,241.30. CA PLS

RECD FH1WU

1043 PD LONG (Toolco-Boeing Contracts-B707-331s, 3/16-3/19/56)

WICHITA KANS MAR 19

HUGHES TOOL CO, ATTN C H PRICE

2200 GULF CLDG HOU

LIMITED

460-0-415.

THE OFFERS OF THE HUGHES TOOL COMPANY SET FORTH IN YOUR
LETTER DATED MARCH 16, 1956, RELATING TO ONE ADDITIONAL
MODEL 707-131 AIRCRAFT AND 18 MODEL 707-320 AIRCRAFT
ARE HEREBY ACCEPTED. THE DELIVERY SCHEDULE FOR THE 18
MODEL 707-320 AIRCRAFT IS AS FOLLOWS

NOVEMBER 1959 1

DECEMBER 1959 2

JANUARY 1960 1

FEBRUARY 1960 2

MARCH 1960 2

APRIL 1960 3

MAY 1960 3

JUNE 1960 4

SINCE YOU ARE NOT PURCHASING THE REQUIRED NUMBER OF
AIRCRAFT AND TO AVOID ANY POSSIBLE MIS-UNDERSTANDING WE
POINT OUT THAT PARAGRAPH 2 OF A LETTER ALSO DATED JANUARY
6, 1956 AND RELATING TO INTERIOR ARRANGEMENTS OF THE
MODEL 707-131 AIRCRAFT /REFERRED TO IN THAT LETTER AS
THE 707-120/ IS INAPPLICABLE TO THIS TRANSACTION.

FURTHERMORE WE ASSURE THAT THE "FAVORED NATION"

CLAUSE IN OUR 707-131 AGREEMENT WITH YOU WOULD NOT BE
APPLICABLE TO THE PROPOSED LIGHT AIRPLANE WHICH WE HAVE
DISCUSSED WITH MR HUGHES.

THE \$4,100,001.30 TRANSFERRED ON MARCH 16, 1956 TO

WESTERN UNION
TELEGRAMWESTERN UNION
TELEGRAMWESTERN UNION
TELEGRAM

FILE 54,060,241.30 TRANSF

PACIFIC NATIONAL BANK OF SEATTLE THROUGH THE NATIONAL
BANK OF COMMERCE OF HOUSTON, TEXAS AND THE FEDERAL
RESERVE BANK AND REPRESENTING 5 PERCENT OF THE BASIC
PRICE OF ONE MODEL 707-131 AIRCRAFT AND 5 PERCENT OF THE
BASIC PRICE FOR 16 MODEL 707-320 AIRCRAFT WILL BE
ACCEPTED BY US TODAY AS THE FIRST ADVANCE PAYMENT ON
SUCH AIRCRAFT.

A CONFIRMING LETTER AGREEMENT RELATING TO THE
16 MODEL 707-320 AIRCRAFT AND A CONFIRMING SUPPLEMENTAL
AGREEMENT TO PURCHASE AGREEMENT NO 7 DATED MARCH 2, 1956,
RELATING TO THE ONE MODEL 707-131 AIRCRAFT, BOTH OF WHICH
WILL BE SIGNED ON BEHALF OF BOEING, WILL BE MAILED
TO YOU IMMEDIATELY.

BOEING A

PLANE CO SEATTLE WASH WILLIAM M ALLEN PRESIDENT.

WE FURTHERMORE WE ASSUME

460-0-415 16 1956 707-131 16 707-320 16
707-320 1959 1 1959 2 1960 1 1960 2 1960 2 1960
3 1960 3 1960 4 2 6 1956 707-131 707-120/
707-131 54,060,241.30 16 1956 5 707-131
5 16 707-320

58190 TW12

GENERAL DYNAMICS CORPORATION
(Convair Division)

and

HUGHES TOOL COMPANY

PURCHASE AGREEMENT

Relating to Manufacture of
Convair Model 880 Aircraft

Dated 10 September 1956

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PURCHASE AGREEMENT

THIS PURCHASE AGREEMENT (hereinafter called the "Agreement") entered into of this 10th day of September, 1956, by and between GENERAL DYNAMICS CORPORATION, Delaware corporation, having an office (Convairst Division) at San Diego, California (hereinafter called "CONVAIR"), and HUGHES TOOL COMPANY with its offices Houston, Texas (hereinafter called "Buyer");

W I T N E S S E T H:

WHEREAS, Buyer desires to purchase aircraft of the type hereinafter described for the transportation of passengers, mail, express and cargo, and CONVAIR desires manufacture and sell the same to Buyer:

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the parties hereto agree as follows:

ARTICLE 1

Subject Matter of Sale

CONVAIR shall manufacture (including the assembly of subcontracted and purchased parts) at its San Diego plant and sell and deliver to Buyer, and Buyer shall purchase and accept delivery of from CONVAIR the following:

(a) Thirty (30) Convairst Model 880 (hereinafter called "Aircraft") to be manufactured by CONVAIR in accordance with the terms of this Agreement and CONVAIR's Detail Specification Report No. ZD-22-002 dated 6-1-56, revised 9-7-56, (hereinafter called "Detail Specification") set forth in Exhibit A attached hereto and made a part hereof, as the same may be modified pursuant to Article 5 hereof.

(b) Spare parts for said Aircraft, all as more particularly set forth in Exhibit B hereof.

Delivery of Aircraft

(a) Delivery Schedule

- (1) The Aircraft shall be delivered to Buyer subject to (b) below, ready for flight not later than the dates set forth in the following schedule:

<u>Month of Delivery</u>	<u>Number of Aircraft</u>
January, 1960	1
February, 1960	1
March, 1960	1
April, 1960	2
May, 1960	2
June, 1960	2
July, 1960	3
August, 1960	4
September, 1960	5
October, 1960	5
November, 1960	4

The Aircraft covered by this Agreement shall be, in the order of priority of manufacture and delivery by CONVAIR of any Aircraft of the same basic model, as follows: The first through third, the fifth, the sixth, the eighth through the eleventh, the fifteenth through the twenty-first, the twenty-fourth through the thirty-third, and the thirty-seventh through the fortieth.

- (2) CONVAIR recognizes the importance to Buyer of early deliveries of the Aircraft hereunder and shall endeavor continuously to better the above delivery schedule.
- (3) The point of delivery shall be such point in the United States as may be designated by Buyer and at which the Aircraft can be landed. All expenses of, and in connection with, fly-away from San Diego, California, shall be borne by Buyer.

- (4) Upon delivery to Buyer of each Aircraft in accordance with the terms hereof, title to and all risks in connection with such Aircraft shall pass from CONVAIR to Buyer.
- (5) In the event any Aircraft is ready for delivery and CONVAIR so notifies Buyer of this fact but delivery of any such Aircraft is delayed by Buyer (whether or not such delay is out of Buyer's control) Buyer shall promptly reimburse CONVAIR for all cost and expense, including, but not limited to, reasonable compensation for storage, insurance and all taxes of every nature whatsoever, incurred by CONVAIR during, or paid or incurred as a result of any such delay in excess of one (1) week. The provisions of this paragraph (a) (5) shall not apply to delays in delivery, if any, referred to in paragraph (b) of this Article, occurring prior to final certification.
- (6) In the event any aircraft is destroyed or damaged beyond repair prior to delivery, CONVAIR shall be obligated to deliver, as a replacement, the first available unsold aircraft of the same basic model; provided, however, that Buyer shall make written request therefor within thirty (30) days after receiving notice from CONVAIR of such destruction or damage, otherwise the number of Aircraft to be delivered hereunder shall be reduced by the Aircraft so damaged or destroyed and CONVAIR shall forthwith repay to Buyer all payments theretofore made by Buyer with respect to that Aircraft.

(b) Certification

- (1) The schedule of CONVAIR's performance hereunder provides for completion of all ground and flight tests required by the Civil Aeronautics Administration to obtain final airworthiness and type

certificates by July 1, 1960. Because of the importance to Buyer of early issuance of the airworthiness and type certificate, CONVAIR agrees to use its best efforts to better the above date.

- (2) Prior to receipt of final certificates as defined in sub-paragraph (1) above, CONVAIR will have completed some of the Aircraft ready for delivery in all respects except for such final certificates, and CONVAIR will tender delivery to Buyer of all such Aircraft and Buyer will accept delivery from CONVAIR of such completed Aircraft to the extent that they can be used by Buyer for pilot training and/or other purposes, but conditioned upon and subject to CONVAIR's obtaining final certificates at a later date. CONVAIR shall not be considered to be in default of delivery as to any Aircraft not so accepted by Buyer. CONVAIR may require return of such delivered Aircraft for purposes of obtaining such final certificates and Buyer agrees to make them available for this purpose, upon reasonable notice, in such manner as CONVAIR may direct, but with due regard to reducing to a minimum the time out of service. Subject to the provisions of sub-paragraph (e) of Article 5 hereof, all costs, if any, in connection with obtaining such final certificates shall be borne by CONVAIR.

ARTICLE 3

Price of and Payment for Aircraft

- (a) Price. The total Base Price of the Aircraft purchased hereunder shall be \$112,500,000, computed on a Unit Base Price of \$3,750,000 per unit delivered in accordance with Article 2 hereof.
- (b) Payments. The total Base Price of the Aircraft purchased hereunder shall be paid as follows:
- (1) \$26,250,000 upon execution hereof, representing \$875,000 per Aircraft for each of the thirty (30) Aircraft, and
 - (2) The balance of the Unit Base Price upon delivery of each of the Aircraft.

Changes

(a) The Detail Specification may be amended at the instance of either party from time to time by Change Orders in writing, which shall set forth in detail the particular specification involved, the changes to be made therein, and the effect, if any, of such change on price, design, performance, weight, balance and time of delivery. Neither Buyer nor CONVAIR shall refuse unreasonably to execute any Change Order proposed by the other. CONVAIR shall offer to Buyer with reasonable promptness for consideration as a change under this paragraph (a) any improvement developed by CONVAIR for incorporation in Model 880 aircraft after the date of this Agreement and prior to delivery of all the Aircraft.

(b) The Detail Specification may also be amended by a change in any item of material, parts, accessories or equipment, specified therein by kind, type or source upon the written consent of Buyer's Factory Representative specifying the Aircraft affected. CONVAIR's substitution of items pursuant to such consent of Buyer's Factory Representative may thus be effected without Change Orders; but in no instance shall any such substitution increase the price of any Aircraft or affect CONVAIR's obligations under this Agreement or under the Detail Specification.

(c) All Change Orders shall show the Aircraft affected and the recurring and non-recurring charges or credits to Buyer occasioned thereby. The non-recurring charges or credits shall be reflected on the invoice covering the first Aircraft to which the change is applicable, and the recurring charges or credits shall be reflected on invoices covering each Aircraft to which the change is applicable. CONVAIR will, at the time of delivery of the last Aircraft hereunder, compute the effect of amortization of the non-recurring charges applicable to such changes over the total sales of aircraft at that time incorporating such changes, and shall reflect the credit, if any, due Buyer as a result of such further amortization in a Change Order hereto.

(d) Change Orders shall not be binding on either party and shall not be carried out unless and until mutually executed by persons respectively duly authorized in writing by CONVAIR and Buyer. No charges for extras shall be allowed or be collectible from Buyer unless authorized by a Change Order executed as aforesaid, except as otherwise provided herein.

(e) If any law, directive, order, proclamation, regulation or ruling of the United States Government or any agency thereof becomes effective after the date of this Agreement which requires any change, addition or modification to any undelivered Aircraft in order to obtain an Airworthiness Certificate in the transport category from the United States Civil Aeronautics Administration, such change, addition or modification shall be made and evidenced by a Change Order specifying the effect, if any, of such change on design, performance, weight, balance and time of delivery. The cost of making any such change, addition or modification shall be borne equally by CONVAIR and Buyer.

(f) CONVAIR may, without Change Order or Buyer's consent, make minor changes and corrections in the Detail Specification in order to correct defects or improve the Aircraft; provided, that such changes and corrections shall not adversely affect price, time of delivery, functional character or performance of any Aircraft to be purchased hereunder or the interchangeability or replaceability of parts therefor, nor appreciably affect the design, maintenance and service characteristics, weight or balance of any such Aircraft; and provided, further, that CONVAIR promptly shall give written notice to Buyer or Buyer's Factory Representative detailing such change and corrections and other effect, if any, upon any and all of the matters enumerated in this subparagraph (f).

ARTICLE 12

Buyer's Representatives and Inspection

(a) Commencing with the date of this Agreement and until the delivery of the last Aircraft, CONVAIR shall, without additional charge, furnish office space conveniently located with respect to its plant for the accommodation of not more than five (5) personnel of Buyer. Subject to CONVAIR's general rules and regulations, CONVAIR's construction of Aircraft pursuant to this Agreement, and all materials and parts obtained by CONVAIR therefor, and tests related thereto made at CONVAIR's plant at San Diego, California, shall at all reasonable times during business hours be open to inspection by any duly authorized representative or representatives of Buyer (one of whom shall be designated as the "Factory Representative"), except that if access to any portion of CONVAIR's plant where construction is in progress or material or parts are stored is restricted by the United States Government or any agency thereof, CONVAIR shall be allowed a reasonable time to make the items available for inspection to the extent practicable elsewhere than in a restricted portion of the plant. Buyer shall obtain for such personnel of Buyer proper United States Government military security clearance for access to CONVAIR's plant at San Diego, California. CONVAIR shall use its best efforts to obtain correspondingly adequate and reasonable inspection rights for Buyer's representatives with respect to work in process at the plants of CONVAIR's subcontractors.

(b) Any inspection accomplished by Buyer shall be performed so as not to unduly delay or hinder the manufacture, construction or performance by CONVAIR under this Agreement. CONVAIR shall not be obligated to remove parts already installed, remove lining and cover materials or open areas previously closed because of any failure of Buyer to have inspection representatives available at CONVAIR's plant, provided that CONVAIR shall advise Buyer in writing at least [blank] of the scheduled date of arrival of the first

(Toolco-Convair Contracts-CV-880s, 9/10/56)

Aircraft to be delivered hereunder into the primary assembly stage.



ARTICLE 14

Title to Property and Risks

(a) Risk of loss of, or damage to, each Aircraft and Spare Part shall pass from CONVAIR to Buyer upon, but not prior to, delivery thereof in accordance with the terms of this Agreement.

(b) Upon the delivery of each Aircraft and final payment of the Base Price of such Aircraft, adjusted for changes in accordance with Article 5 hereof, CONVAIR shall deliver to Buyer or such of the persons, firms, or corporations referred to in Article 16 as Buyer may designate in writing at least five (5) days before delivery, a bill of sale duly vesting in Buyer, or such other persons, firm or corporation as Buyer may designate, good title to such Aircraft free and clear of all liens, claims, charges and encumbrances of every kind whatsoever, and such other appropriate documents of title with respect thereto as Buyer may reasonably require.

Assignments

(a) This Agreement shall inure to the benefit of and be binding upon each of the parties hereto and their respective successors and assigns, but it may not be voluntarily assigned, in whole or in part, by either party without the prior written consent of the other party, except that either party's interest shall be assignable through merger, consolidation or reorganization which includes voluntary sale or transfer of substantially all of its assets; provided, however, that CONVAIR may assign any of its fixed or contingent rights to receive money hereunder, and Buyer may assign any of its contingent rights to the Aircraft or any of them for the purpose of securing any obligation for the repayment of monies loaned or advanced by any financial institution to finance in whole or in part the purchase of the Aircraft. Notwithstanding the foregoing, Buyer shall have the privilege to assign this Agreement in whole or in part without such consent, to TRANS WORLD AIRLINES, INC., and upon such assignment and full notice thereof to CONVAIR, TRANS WORLD AIRLINES, INC. shall succeed to such of the rights, privileges, liabilities and obligations of the Buyer hereunder as are so assigned and the Buyer shall cease to have or be subject to such rights, privileges, liabilities or obligations so assigned; provided, that Buyer shall, in the event of assignment to TRANS WORLD AIRLINES, INC., involving payment obligations under this Agreement, guarantee the due and punctual payment of such obligations by said assignee.

(b) Buyer and its successors and assigns may not, without first obtaining CONVAIR's written consent (which shall not be unreasonably withheld) resell or lease any Aircraft, or agree to do so, until the expiration of two (2) years after delivery of the first Aircraft hereunder. This limitation shall be

expressly included in any assignment made by the Buyer under this Article, and be expressly agreed to by the assignee. CONVAIR's permission is hereby granted, however, for lease of the Aircraft to any company for use incidental to equipment interchange or seasonal lease agreement; Buyer may, and at Buyer's request CONVAIR shall, take any action reasonably required for the purpose of causing any Aircraft to be subjected to an equipment trust, conditional sale, lien or other arrangement for the financing by Buyer of the purchase of any such Aircraft; provided, however, that no such action shall subject CONVAIR to any liability which it would not otherwise be subject to hereunder or modify in any respect CONVAIR's contract rights hereunder or require CONVAIR to divest itself of title to or possession of any such Aircraft until delivery thereof and payment therefor as provided in this Agreement; and Buyer may resell or lease any such Aircraft to TRANS WORLD AIRLINES, INC.

ARTICLE 18

Contracts with Other Purchasers

If subsequent to the date of this Agreement, CONVAIR shall contract to sell to any other commercial purchaser any of the first one thousand (1,000) aircraft of the same basic model at a Unit Base Price less than (1) \$3,500,000.00 each or (ii) the then applicable Unit Base Price of the Aircraft hereunder, whichever is lower, plus or minus appropriate adjustments for labor and material escalation and for variations in specifications and equipment, or on other terms and conditions materially more favorable than those incorporated in this Agreement, except in respect to time and amount of down payments or progress payments set forth in Article 3(b) hereof, the purchase price of all Aircraft to be delivered hereunder shall be reduced to the lowest price to be paid by any such other purchaser and such other more favorable terms and conditions shall by appropriate amendment be offered to buyer.



DX68, Amend. No. 4, page 1
(Toolco-Convair Contracts-CV-880s, 3/2/60)

AMENDMENT NO. 4

TO

PURCHASE AGREEMENT BY AND BETWEEN

GENERAL DYNAMICS CORPORATION
(Convair Division)

AND

HUGHES TOOL COMPANY

Dated March 2, 1960

THIS AGREEMENT (hereinafter called "Amendment No. 4") entered into as of this 2nd day of March 1960, by and between GENERAL DYNAMICS CORPORATION, a Delaware Corporation, having an office (Convair Division) in San Diego, California, (hereinafter called "CONVAIR"), and HUGHES TOOL COMPANY, with its general offices at Houston, Texas (hereinafter called "Buyer");

WITNESSETH:

WHEREAS, Buyer and CONVAIR have entered into a Purchase Agreement dated 10 September 1956, relating to the purchase and sale of thirty (30) Model 880 Convair aircraft (hereinafter referred to as the "AGREEMENT"); and

WHEREAS, Buyer and CONVAIR now desire to amend said AGREEMENT as more specifically hereinafter set forth;

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the parties hereto agree to amend the AGREEMENT as follows:

1. By deleting Article 2(a) (1) and telegraphic revision thereto from General McNarney to Mr. Price, dated September 17, 1956, and inserting in lieu thereof the following:

"(a) Delivery Schedule

- (1) The Aircraft shall be delivered to Buyer, subject to
(b) below ready for flight, not later, with respect to
each of the Aircraft as hereinafter identified, than

the respective dates set forth in the following
schedule:

Aircraft as Identified by Manufacturing No. Assigned According to Sequence of Original Convair Manufacturer	Month (during the year 1960) in which Aircraft is to be Tendered for Delivery	Position of Aircraft in Sequence of Convair Delivery to all Customers (including Buyer) of Commercial Jet Aircraft
10	May	4
12	May	5
20	May	7
22	May	8
23	June	10
24	June	11
25	June	12
26	June	13
27	July	14
28	July	15
30	July	17
31	July	18
2	July	19
5	August	20
32	August	21
33	August	22
34	August	23
35	August	24
3	September	26

<u>Manufacture Sequence (Cont'd.)</u>	<u>Month (Cont'd.)</u>	<u>Delivery Sequence (Cont'd.)</u>
39	September	29
40	September	30
42	September	32
13	October	33
14	October	34
15	October	35
18	October	36
19	October	37
6	November	38
9	November	39
8	November	40

(The numbers missing in regular numerical sequence from the first and third columns above represent those assigned, for manufacturing and delivery sequence purposes, respectively, to Delta Air Lines, Inc., except that the number 1, or first, jet aircraft in Convair's sequence of original manufacture is to be retained by Convair).

2. By deleting the second sentence in Article 5(c) and inserting in lieu thereof the following three sentences:

"All non-recurring charges or credits occasioned by Change Orders dated prior to, and affecting Aircraft delivered or to be delivered prior to, 30 November 1960, shall be reflected on an invoice issued by Convair on 30 November 1960. Non-recurring charges or credits occasioned by all other Change



Orders, to the extent such charges or credits have not theretofore or will not thereafter be included or includable in the invoice referred to in the next preceding sentence, shall be reflected on the invoices covering each Aircraft to which the charge is applicable. All recurring charges or credits shall be reflected on invoices covering each Aircraft to which the charge is applicable.

3. This Amendment No. 4 shall not be varied in its terms by any oral agreement or representation or otherwise than by an instrument in writing of even or subsequent date hereto, executed by both parties by their officers thereunto duly authorized.

4. Except as amended hereby, all terms and conditions of the AGREEMENT shall remain in full force and effect.

Executed in quadruplicate as of the day and year first above written.

GENERAL DYNAMICS CORPORATION
Convair Division

By [Signature]

Title President

Attest:

HUGH... TOOL COMPANY

By [Signature]

Title Vice President

Attest:

**Amendment No. 6 to Purchase Agreement
between
General Dynamics Corporation (Convair Division)
and
Hughes Tool Company
dated 10 September 1956**

THIS AGREEMENT (hereinafter called "Amendment No. 6") entered into as of this 10th day of November 1960, by and between GENERAL DYNAMICS CORPORATION, a Delaware corporation, having an office (Convair Division) in San Diego, California, (hereinafter called "CONVAIR") and HUGHES TOOL COMPANY, with its general offices at Houston, Texas (hereinafter called "Buyer"):

WITNESSETH:

WHEREAS, Buyer and CONVAIR have entered into a Purchase Agreement dated 10 September 1956, relating to the purchase and sale of thirty (30) Model 880 Convair aircraft (hereinafter referred to as the "AGREEMENT"); and

WHEREAS, Buyer and CONVAIR now desire to reduce the quantity of Model 880 Convair aircraft covered by the AGREEMENT from thirty (30) to twenty-four (24) and to that end desire to amend the AGREEMENT as more specifically hereinafter set forth;

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the parties hereto agree to amend the AGREEMENT as follows:

1. By changing the word "Thirty (30)" where it appears in paragraph (a) of Article 1 to "Twenty-four (24)".

2. By deleting, from the delivery schedule set forth in Article 2(a)(1) (as provided in Amendment No. 4 to the AGREEMENT), the following six (6) aircraft, as identified by manufacturing number assigned according to sequence of original Convair manufacture: 5, 8, 12, 20, 22 and 23.
3. By deleting from Article 3(a) the figures "\$112,566,000" and substituting therefor "\$90,052,800".
4. By deleting Article 3(b) and by inserting in place thereof the following:

"(b) Payments. The total Base Price of the Aircraft purchased hereunder shall be paid as follows:

- (1) \$21,013,200 upon execution hereof, representing \$875,550 per Aircraft for each of the twenty-four (24) Aircraft, and
- (2) The balance of the Base Price of each Aircraft plus or minus charges or credits, if any, resulting from Change Orders heretofore or hereafter executed pursuant to Article 5 hereof, and other price elements expressed; provided by this Agreement, upon tender of delivery, in accordance with Article 3 hereof, of each of the Aircraft manufactured in accordance with the terms of this Agreement and the Detail Specification.

5. By changing appropriately, in all Letters of Agreement and in all Change Orders, each reference to thirty (30) aircraft to reflect the reduction in quantity of aircraft to twenty-four (24) and to reflect the elimination from the AGREEMENT of the six (6) aircraft identified in paragraph 2. of this Amendment No. 6.

6. This Amendment No. 6 shall be construed in accordance with the laws of the State of California.

This Amendment No. 6 shall not be varied in its terms by any oral agreement or representation or otherwise than by an instrument in writing of even or subsequent date hereto, executed by both parties by their officers thereunto duly authorized.

Except as amended hereby, all terms and conditions of the AGREEMENT shall remain in full force and effect.

Executed in quadruplicate as of the day and year first above written.

GENERAL DYNAMICS CORPORATION

Attest:

By J. V. Walsh

Title President - Convair Division

HUGHES TOOL COMPANY

Attest:

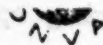
By C. H. Green

Title Vice President

A. C. Williams
Assistant Secretary

CONVAIR

A DIVISION OF GENERAL DYNAMICS CORPORATION



GENERAL OFFICES

SAN DIEGO 13, CALIFORNIA

TELEPHONE CIPRESS 8-6011

Letter of Agreement No. 1

Hughes Tool Company
Houston, Texas

Gentlemen:

In consideration of the Purchase Agreement entered into concurrently herewith between General Dynamics Corporation and Hughes Tool Company relating to the manufacture of thirty (30) Convair Model 880 aircraft, the parties hereto agree that the Unit Base Price of \$3,750,000 provided for in Article 3 of said Purchase Agreement shall be subject to adjustment as additional commercial sales of Model 880 aircraft are made beyond the forty (40) aircraft purchased by Hughes Tool Company and Delta Air Lines, Inc., said adjustment to be made on the following basis:

1. The Unit Base Price of \$3,750,000 stated in Article 3(a) of said Purchase Agreement shall be reduced, without regard to the proviso in paragraph 2 below, at the rate of \$8,333.33 per Aircraft for each commercial sale of Model 880 aircraft from No. 41 through No. 70 for a total reduction of \$250,000 per Aircraft sold under said Purchase Agreement.
2. The said Unit Base Price of said Aircraft shall be further adjusted as additional commercial sales of Model 880 aircraft are made beyond the forty (40) Aircraft covered by said Purchase Agreement and the Purchase Agreement with Delta Air Lines, Inc., as follows:
 - (i) A reduction of \$5,000 per Aircraft for each commercial sale from No. 41 through No. 100, resulting in an adjusted Unit Base Price of \$3,200,000 at such 100th sale,
 - (ii) A reduction of \$6,000 per Aircraft for each commercial sale from No. 101 through No. 150, resulting in an adjusted Unit Base Price of \$2,900,000 at such 150th sale.
 - (iii) A reduction of \$3,400 per Aircraft for each commercial sale from No. 151 through No. 200, resulting in an adjusted Unit Base Price of \$2,730,000 at such 200th sale.
 - (iv) A reduction of \$1,600 per Aircraft for each commercial sale from No. 201 through No. 250, resulting in an adjusted Unit Base Price of \$2,650,000 at such 250th sale.

Hughes Tool Company
Houston, Texas

(v) An appropriate reduction per Aircraft for each commercial sale from No. 251 through No. 1,000, consistent with reasonable accounting procedures on a basis of computation consistent with the principles followed in computing reductions as set out in (i) through (iv) above, resulting in an adjusted Unit Base Price of \$2,500,000 at such 1,000th sale; provided, however:

- (a) that each of the adjusted Unit Base Prices listed in subparagraphs (i) through (iv) shall in no event become finally effective, nor shall CONVAIR be required to give final effect thereto, if any such adjusted Unit Base Price would operate to reduce the combined total price of all the Model 880 commercial aircraft then sold below the actual cost of such aircraft to CONVAIR as charged or to be charged against the Model 880 commercial program under CONVAIR's usual accounting procedures which shall be in accordance with sound accounting practice; and,
- (b) that each of the adjusted Unit Base Prices listed in subparagraph (v) above shall in no event become finally effective, nor shall CONVAIR be required to give final effect thereto, if any such adjusted Unit Base Price would operate to reduce CONVAIR's overall gross profit on all the Model 880 commercial aircraft then sold below six per cent (6%) of the actual cost of such aircraft to CONVAIR as charged or to be charged against the Model 880 commercial program under CONVAIR's usual accounting procedures which shall be in accordance with sound accounting practice; and,
- (c) that the foregoing provisos shall be applied, insofar as the abatement of reductions is provided for therein, only pro tanto to the extent and during the period required to avoid violation of the terms of such provisos.

3. It is recognized by the parties hereto that CONVAIR may invoke the provisos in paragraph 2. (v)(a) and (b) and (c) above before or after payment for the Aircraft or a portion thereof by Buyer in accordance with Article 3(b) of said Purchase Agreement. In such event, and upon the establishment of facts required hereunder to bring such proviso into operation, any initial effectiveness, pursuant to paragraph 5. hereof, theretofore given by way of price reduction shall be reversed to the extent final effectiveness would violate such proviso; i.e., if such initial effectiveness but subsequent reversal both occur prior to Aircraft delivery, Buyer shall make payment at the time of Aircraft delivery without benefit of such price reduction which has been reversed; and similarly, if such reversal occurs subsequent to Aircraft delivery, Buyer shall forthwith repay to CONVAIR any such price reduction so reversed which Buyer has theretofore enjoyed either as a sum Buyer did not pay at the time of Aircraft delivery or as a sum paid by CONVAIR to Buyer subsequent to Aircraft delivery.

Hughes Tool Company
Houston, Texas

4. The Unit Base Price reductions shown above are without effect on other price elements; i.e., the total purchase price of each of the thirty (30) Aircraft covered by the Purchase Agreement with HUGHES TOOL COMPANY shall consist of the adjusted Unit Base Price increased or decreased as the case may be by specification changes, and other price elements expressly provided by said Purchase Agreement.

5. The term "commercial sales" means any arrangement, firm by ordinary standards prevailing in the aircraft manufacturing industry, under which CONVAIR agrees to deliver Aircraft for commercial use to any other person, firm, corporation or other entity, whether passage of title be involved or pursuant to conditional sale, chattel mortgage, lease, or otherwise; and, subject to the other provisions of this letter agreement and the provisions contained in the said Purchase Agreement referred to in the first paragraph hereof, the Unit Base Price reductions provided hereby shall become initially effective upon CONVAIR entering into any such arrangement.

6. The price adjustments contemplated by this letter agreement have been computed without reference to the possibility of sales of Model 880 aircraft to the United States Military Forces, and no adjustment shall be made in relation to such sales except as hereinafter set out. It is mutually agreed that should the United States Military Forces purchase aircraft from CONVAIR in the same basic Model 880, passenger-transport configuration for delivery prior to delivery of Aircraft No. 100 of the commercial Model 880 aircraft, CONVAIR will determine the cost effect of such military purchases upon the Model 880 commercial program. Such determination will be based upon, but not limited to, a consideration of the effect of such military purchases upon the development costs of the said Model 880 aircraft, learning curves and/or resulting profit to CONVAIR applicable to the Model 880 program. Depending upon the extent to which the said military purchases may benefit the Model 880 commercial program, CONVAIR and the Buyer will negotiate as to whether any price revision to the Buyer is appropriate and, if so, the extent thereof.

7. CONVAIR shall promptly notify Buyer of any Model number change which, because of fundamental dissimilarity of the new model from prior production, in CONVAIR's opinion would operate to exclude aircraft of the new Model from the price adjustment provisions contained in this agreement. In the event there are sales of any such new Model, CONVAIR will determine the cost effect of such sales on the Model 880 program. Depending upon the extent to which such sales may benefit the Model 880 program, CONVAIR and the Buyer will negotiate as to whether any price revision to the Buyer is appropriate and, if so, the extent thereof. Failure of CONVAIR to notify Buyer of any such Model number change within fifteen (15) days after the sale of such changed Model shall constitute a waiver by CONVAIR of the effect thereof on the aforesaid price adjustment provisions.

8. Notwithstanding any provisions to the contrary elsewhere contained, the final adjusted Unit Base Price of each Aircraft shall in no event exceed the applicable Unit Base Price set out below, in event CONVAIR's total commercial sales, including the forty (40) aircraft covered by said Purchase Agreement and the Purchase Agreement with Delta Air Lines, Inc., become 150 or greater:

250 or more

...ANY

MSG 1862

DX68, Telegrams, page 1
(Toolco-Convair Contracts-CV-880s, 9/20-9/21/56)

C H PRICE VICE PRESIDENT HUGHES TOOL CO

HOU

REFERENCE IS MADE TO OUR WIRE OF 17 SEPTEMBER 1956 AS AMENDED BY OUR WIRE DATED 19 SEPTEMBER 1956. SAID WIRE IS FURTHER AMENDED AS FOLLOWS.

THE AMENDMENTS TO LETTER OF AGREEMENT NO. 1 AS CONTAINED IN SUB PARAGRAPHS /7/ AND /8/ ARE STRICKEN AND THE FOLLOWING SUBPARAGRAPH IS INSERTED IN LIEU THEREOF.

SUBPARAGRAPHS /6/ AND /7/ ARE STRICKEN AND THE FOLLOWING IS SUBSTITUTED IN LIEU THEREOF.

"THE AIRPLANE DESCRIBED BY EXHIBIT A TO THE PURCHASE AGREEMENT AND ANY OUTGROWTH OR DERIVATIVE OF THAT AIRPLANE ARE EQUALLY INCLUDED FOR ALL PRICE ADJUSTMENT PURPOSES CONTEMPLATED BY THIS LETTER. AGREEMENT AND ARE INCLUDED IN THE SCOPE OF THE PHRASES "MODEL 880 COMMERCIAL AIRCRAFT. COMMERCIAL SALES, AND MODEL 880 COMMERCIAL PROGRAM". PROVIDED HOWEVER THAT WITH REGARD TO SALES TO THE UNITED STATES MILITARY FORCES IN COMPUTING PRICE ADJUSTMENTS THESE WILL BE TAKEN INTO ACCOUNT IN PROPORTION TO WHATEVER BENEFITS ACCRUE FROM THEIR PRODUCTION TO THE COMMERCIAL PRODUCTION PROGRAM AND VICE VERSA." IT SHOULD BE NOTED THAT THE ABOVE CHANGE WILL REQUIRE APPROPRIATE RENUMBERING OF THE PARAGRAPHS IN LETTER AGREEMENT NO. 1 AND WITH THIS EXCEPTION ALL OF THE REMAINDER OF OUR TELEGRAMS OF 17 SEPTEMBER 1956 AND 19 SEPTEMBER 1956 REMAIN UNCHANGED

JOSEPH T MCNARNEY
PRESIDENT
CONVAIR

WUA027 NL PD

WUX SANDIEGO CALIF SEP 21

C H PRICE VICE PRESIDENT HUGHES TOOL CO

RECEIPT IS ACKNOWLEDGE OF YOUR TELEGRAM OF SEPT 21
CONFIRMING THAT THE CONTRACT DOCUMENTS RELATING TO THE
PURCHASE BY HUGHES TOOL COMPANY OF THIRTY 880 AIRCRAFT
HAVE BEEN EXECUTED WE FURTHER CONFIRM THAT DELTA AIR
LINES INC HAS ON THIS 21 DAY OF SEPTEMBER 1956 EXECUTED
A PURCHASE AGREEMENT COVERING THE PURCHASE BY DELTA OF
TEN OF THE FIRST FORTY CONVAIR 880 AIRCRAFT THEREFORE
THIS CONDITION IMPOSED BY OUR LETTER OF SEPT 8 1956
HAS BEEN FULFILLED AND THE PURCHASE AGREEMENT AND OTHER
CONTRACTURAL INSTRUMENTS COVERING THIRTY CONVAIR 880
AIRCRAFT EXECUTED BY HUGHES TOOL COMPANY ARE NOW, IN FULL
FORCE AND EFFECT

JOSEPH T MCNARNEY PRESIDENT CONVAIR DIVISION
GENERAL DYNAMICS CORP

739A

SEP 21 1956 880 & 1956 880.

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DX68, Letter Agreement E, page 1
(Toolco-Convair Contracts-CV-880s, 9/26/56)
HUGHL **ALL** **CONVIR**

EXECUTIVE OFFICES
TWENTY-SECOND FLOOR GULF BUILDING

HOUSTON 2, TEXAS
September 26,

1956

C. H. PRICE
VICE PRESIDENT
AND TREASURER

Re: General Dynamics Corporation (Convair
Division)-Hughes Tool Company Purchase
Agreement, dated September 20, 1956,
Relating to Convair Model 880
Aircraft.

Convair Division
General Dynamics Corporation
3165 Pacific Highway
San Diego 12, California

Attention: Director of Contracts

Gentlemen:

Article 5 of the subject contract provides that change orders affecting amendments to the detail specification and other terms and conditions of the agreement may be executed from time to time by persons duly authorized by Convair and Hughes Tool Company. For the purpose of representing Hughes Tool Company in matters involving detail specification and other technical changes, we have named as our Special Representative, Mr. R.W. Rummel, whose address is 10 Richards Road, Kansas City, Missouri.

This letter is to evidence Mr. Rummel's authority to represent Hughes Tool Company and, on its behalf, to conduct all negotiations and execute all change orders regarding specifications and other technical matters in connection with the captioned contract; provided, however, that without the written approval of an officer of Hughes Tool Company, Mr. Rummel may not execute change orders evidencing any single change having a price effect per airplane of more than \$30,000.00 or evidencing total changes which in the aggregate have a net price effect in excess of \$150,000.00 per airplane. Please furnish to our Houston office, to the attention of Mr. C.H. Price, copies of all change orders regardless of the amount.

Page 2

- Convair Division

- September 26, 1956

Side Letter of Agreement No. 18 relating to the captioned agreement provides for notice to buyer's representative in those instances specified in the captioned agreement, side letters of agreement and detail specification requiring buyer's approval of the use of materials, methods, processes, equipment or design. This letter is to evidence buyer's representative to receive such notices, together with such information as is otherwise required, with authority to represent buyer in such matters.

In addition to Mr. Rummel's authority as hereinabove set out, we have also authorized him to designate the factory representative for Hughes Tool Company as that term is employed in the captioned contract and related agreements, and we have granted Mr. Rummel the authority to delegate the functions of the buyer's representative to other persons as he deems appropriate. You may, therefore, consider any designation of factory representative or delegation of authority of buyer's representative made by Mr. Rummel as approved by Hughes Tool Company

Yours very truly,

HUGHES TOOL COMPANY

By: Original Signed By
C. H. Felt
Vice President

DX 71, page 1
(Rummel Memo re TWA Equipment Program, 3/15/61) KC

MESSRS. W. L. PIERSON
E. O. COCKE
A. V. LESLIE

R. W. RUMMEL

NEW YORK, NEW YORK
MARCH 15, 1961

TWA EQUIPMENT PROGRAM

CONFIDENTIAL

IT SEEMS APPROPRIATE THAT THE TWA BOARD OF DIRECTORS AT ITS MARCH 20 MEETING TAKE THE FOLLOWING ACTION:

1. AUTHORIZE TWA TO LEASE UP TO SIX BOEING 720B'S.
2. AUTHORIZE TWA TO ENTER INTO A LETTER OF INTENT WITH BOEING (BY MARCH 31, 1961) FOR THE PROCUREMENT OF TWENTY 131B AND SIX 331B TYPE AIRCRAFT, TO BE FOLLOWED BY DEVELOPMENT OF A FIRM CONTRACT BY TWA MANAGEMENT FOR REVIEW BY THE BOARD AT ITS APRIL MEETING AND FOR CONSUMMATION BY APRIL 30, 1961.
3. AUTHORIZE TWA TO CONCLUDE ARRANGEMENTS REQUIRED TO SATISFY THE INITIAL CASH REQUIREMENTS OUTLINED IN THIS LETTER.

AUTHORITY FOR PROCUREMENT OF THE FORTY-EIGHT SPARE PRATT & WHITNEY ENGINES CAN BE DEFERRED UNTIL THE APRIL BOARD MEETING.

AFFIRMATIVE ACTION WILL AVOID THE NEED FOR INCURRING SUBSTANTIAL AIRPLANE PRICE AND ENGINE PRICE INCREASES (\$6,752,000), PRESERVE DELIVERY POSITIONS AT INITIAL INVESTMENT, AND PROVIDE TWA WITH INTERIM LEASE AIRCRAFT. OF COURSE THE MARCH 31 LETTER OF INTENT WOULD CONTAIN ALL THE NECESSARY AND USUAL CONDITIONS SUCH AS BEING WHOLLY SUBJECT TO SUCCESSFUL CONCLUSION OF FINANCING ARRANGEMENTS, MUTUAL AGREEMENT ON SPECIFICATIONS, ETC.

NOTWITHSTANDING PROGRESS HAS BEEN MADE WITH BOEING. BOEING WILL CARRY ALL PROGRAM RISKS THROUGH MARCH 31, 1961 AND WILL CONTINUE TO HOLD DELIVERY POSITIONS FOR THE TWENTY 131B'S, THE SIX 331B'S, AND THE SIX LEASE 720B'S UNTIL THEN.

- A. BOEING IS NOW WILLING TO PROCEED ON THE BASIS OF A LETTER OF INTENT FOR THE 131B'S AND THE 331B'S, PROVIDING SUCH A LETTER IS SIGNED BY MARCH 31 AND FURTHER PROVIDED THAT WITHIN TEN DAYS THEREAFTER TWA MAKES AN INITIAL ROYEST DOWN PAYMENT OF \$25,000 PER AIRPLANE, OR \$650,000 FOR THE TWENTY-SIX AIRCRAFT.
- B. BOEING IS WILLING TO DEFER FINAL COMMITMENT UNTIL APRIL 30, 1961. WITHIN TEN DAYS THEREAFTER, OR ON MAY 10, BOEING WOULD REQUIRE COMPLETION OF THE 5% REQUIRED DOWN PAYMENT. THIS WOULD AMOUNT TO APPROXIMATELY \$7,190,000 FOR THE TWENTY 131B'S AND SIX 331B'S. IF NECESSARY, BOEING MIGHT BE WILLING TO ALTER THE 5% DOWN PAYMENT REQUIREMENT UNTIL SUCH TIME AS SEEMS PRACTICAL. IN THIS CONNECTION, I ASSUME MR. LESLIE WOULD WANT TO NEGOTIATE WITH OUR FINANCIAL OFFICERS.

MESSRS. W. L. PIERSON
E. O. COCKE
A. V. LESLIE

R. W. RUMMEL

MARCH 15, 1961

-2-

CONFIDENTIAL

C. BOEING NOW REQUIRES A FIRM CONTRACT FOR THESE AIRCRAFT BY APRIL 30 IN ORDER TO

- 1) HOLD AIRPLANE PRICE,
- 2) HOLD AIRPLANE DELIVERY POSITION.

ALTHOUGH THEY APPEAR VERY RIGID ABOUT THIS, PERHAPS STEPS A AND B COULD BE USED AS A NEGOTIATING BASIS TO GET AN EXTENSION OF THIS DATE.

AS PREVIOUSLY ADVISED, SOME TIME AGO BOEING ANNOUNCED TO THE INDUSTRY A \$310,000 PRICE INCREASE EFFECTIVE MAY 1, 1961. UNLESS A FIRM CONTRACT, INCLUDING INITIAL PAYMENTS, IS CONSUMMATED BY THAT DATE, THE TWENTY 131B AIRCRAFT WOULD INCREASE \$3,800,000 IN PRICE. FURTHER, PRATT & WHITNEY HAS ANNOUNCED A 5% PRICE INCREASE ON SPARE ENGINES EFFECTIVE MAY 1, 1961. THIS AMOUNTS TO \$552,000 FOR THE FORTY-EIGHT SPARE ENGINES THAT WILL BE REQUIRED FOR THE TWENTY-SIX AIRPLANES. IN THIS RESPECT, PRATT & WHITNEY REQUIRES A 5% DOWN PAYMENT WHICH IN THIS INSTANCE IS EQUIVALENT TO THE PRICE INCREASE. IN ORDER TO AVOID THESE PRICE INCREASES AIRPLANES AND ENGINES SHOULD BE PLACED ON FIRM ORDER PRIOR TO MAY 1.

I PROVIDED MR. LESLIE WITH AN ESTIMATED CASH SCHEDULE WITH MY LETTER OF MARCH 10. THESE DATA WERE SUBSEQUENTLY REVISED TO INCLUDE MORE RELAXED BOEING PROGRESS PAYMENT TERMS FOR THE 1963 AND 1964 AIRCRAFT. THE REVISED SCHEDULES WERE HANDLED TO MR. LESLIE INFORMALLY AND ARE AVAILABLE TO OTHER RECIPIENTS OF THIS LETTER IF DESIRED.

USE OF THE LEASE 720B'S IS ENCOURAGING. THE PLAN OUTLINED IN MY LETTER OF MARCH 10 TO MR. LESLIE IS WORKING OUT FAVORABLY AND IT WOULD APPEAR LEASE OF FOUR OR SIX SUCH AIRCRAFT IS DEFINITELY WORTHWHILE. ORIGINAL TERMS HOLD EXCEPT THAT IT IS NO LONGER NECESSARY TO PROTECT BOEING'S INVESTMENT PRIOR TO MARCH 31. BOEING REQUIRES THAT THE LEASE BE SIGNED BY MARCH 31, THE SAME DATE REQUIRED FOR SIGNING THE AIRPLANE LETTER OF INTENT, AT WHICH TIME FIRST AND LAST MONTHS' LEASE PAYMENT WOULD BE IN ORDER. THIS AMOUNTS TO \$160,000 PER AIRPLANE, OR \$240,000 FOR THE FOUR AIRPLANES THAT ARE PRESENTLY OFFERED FOR LEASE ON A FIRM BASIS.

IN THE EVENT TWA WOULD NOT SIGN FINAL CONTRACTS FOR THE PURCHASE OF AT LEAST TEN NEW BOEING AIRPLANES, THEN THE LEASE OF THE 720B'S WOULD AUTOMATICALLY BECOME A SEVEN-YEAR LEASE. IN MY OPINION, IN THIS UNLIKELY EVENTUALITY THE RISK OF DISPOSING OF THE LEASE 720B'S IS NOT GREAT, PARTICULARLY IN LIGHT OF YESTERDAY'S CAB ACTION REGARDING TWO NEW TRANSCONTINENTAL ROUTES.

I RECOMMEND THAT THIS ALL BE PUT FORWARD TO TWA'S BOARD OF DIRECTORS FOR AFFIRMATIVE ACTION DURING ITS MARCH 20 MEETING.

ATTACHED FOR POSSIBLE REFERENCE PURPOSES IS A COPY OF BOEING'S CURRENT BRIEF PROPOSALS.

AX-1538

DX 72

(Telegram - Bew to Rummel - 2/27/61) SF-1201 (4-70)

 NL - Night
 LT - International
 Lower Letters

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R W RUMME VICE PRESIDENT PLANNING AND RESEARCH

TRANS WORLD AIRLINES INC 330 MADISON AVE NYK

FOLLOWING IS COPY OF WIRE SENT TO NORMAN PARNET THIS DATE QUOTE
 OUT OF SEQUENCE FLIGHTS OF AIRCRAFT NO 30 ON 21 FEB FOR TWO
 HOURS 35 MINS. AND ONE HOUR 55 MINS A BOON-DOGGLE IN MY ESTIMATION.
 AIRCRAFT NO 30 HAS APPROXIMATELY SEVENTY FIVE OUTSTANDING MODIFICATIONS
 TO BRING IT UP TO CONFIGURATION OF THE LAST AIRCRAFT DELIVERED.
 THEREFORE, NO EXCUSE FOR THE EARLY FLIGHT OTHER THAN TO PREPARE
 IT FOR DEMO FLIGHT FOR POTENTIAL CUSTOMERS. SINCE FRIDAY 17
 FEB. THE EFFORT ON AIRCRAFT 30 AND 26 HAS FURTHER DILUTED THE
 EXPERIENCED MAN POWER AND IMPAIRED OUR CHANCE OF EARLY MARCH
 DELIVERIES OF 33 AND 35. WITH A CONTINUED EFFORT AND AN ASSIGNMENT,
 AIRCRAFT 30 COULD DELIVER WEEK-END OF 17 MARCH WITH AIRCRAFT
 26 COMING A WEEK LATER. AIRCRAFT NO 2 REVEALED SERIOUS FLAP

CLASS OF SERVICE

This is a fast message
 unless its delivery char-
 acter is indicated by the
 proper symbol.

WESTERN UNION

TELEGRAM

W. P. MARSHALL, President

SF-1201 (4-70)

SYMBOLS

DL = Day Letter

NL = Night Letter

LT = International
Lower Letters

The time shown in the date line on domestic telegrams is LOCAL TIME at point of origin. Time of receipt is LOCAL TIME at point of destination.

TRAILING EDGE MIS-ALIGNMENT DURING RIGGINGS CHECK NECESSITATING
 RELOCATION OF RIGHT HAND INBOARD FLAP TRACKS THIS 80-ELAPSED-HOUR
 JOB WILL CAUSE THREE DAY SLIPPAGE TO APPROXIMATE 10 MARCH 1961
 TWO 12-HOUR SHIFTS 6 AND 7 DAYS A WEEK, HAS CONVAIR MEN EVIDENCING
 FATIGUE AND INEFFICIENCIES FURTHER REORGANIZATION THIS WEEK
 SAW FACTORY MANAGER PAUL OSBORNE RESIGNING AND STEVE BARINKA,
 SUPERVISOR OF FIELD OPERATIONS, BEING REPLACED BY MR RUMBAUGH,
 FROM PALMDALE. IN THE IMMEDIATE FUTURE I EXPECT TO SEE A REVISED
 CONVAIR DELIVERY SCHEDULE COMING FROM THE OFFICE OF JOE FAYNE,
 THE NEW ASSISTANT DIVISION MANAGER. CONVAIR CONTRACTS DIGGES
 SAY THE HUGHES TOOL COMPANY HAS INDICATED THEY WILL OFFER ALL
 UNASSIGNED 850 AIRCRAFT TO TWA AND THIS MAY ACCOUNT FOR CONVAIR

DX 73

(Letter - Leslie to Holliday - 3/20/61)

TRANS WORLD AIRLINES, INC.

March 20, 1961.

Hughes Tool Company
2100 Golf Building
Houston 2, Texas

Attention: Mr. Raymond M. Holliday

Gentlemen:

We have been informed that the Hughes Tool Company is willing to assign to TWA its rights to acquire from the manufacturer 4 Convair 440's, Nos. 39, 34, 9 and 18. TWA is interested in acquiring these airplanes if this can be arranged promptly and would like to discuss with you the terms and conditions on which this can be accomplished.

We suggest a meeting with your representative in this connection at the earliest possible date.

Very truly yours,

A. V. Leslie
A. V. Leslie

3/20

sent to Holliday
myself and receipt for
A.V.L.

(Letter - Leslie to Holliday - 4/3/61) 74

TRANS WORLD AIRLINES, Inc.

380 Madison Avenue
New York 17, New York, U.S.A.A. V. LESLIE
SENIOR VICE PRESIDENT,
FINANCE AND TREASURER

April 3, 1961

Hughes Tool Company
2200 Gulf Building
Houston 2, Texas

Attention: Mr. Raymond M. Holliday

You have requested that we advise you of the terms and conditions under which we might be willing to accept the four additional Convair 880 aircraft covered by your agreement of September 10, 1956 with General Dynamics Corporation.

Subject to the conditions hereinafter set forth we would be willing to acquire such aircraft by (1) assuming payment to General Dynamics Corporation of the balance of the original purchase price specified in the agreement of September 10, 1956, as adjusted to reflect changes in specifications and as adjusted to reflect reductions in the purchase price pursuant to letter agreement No. 1 accepted September 20, 1956, as amended to date (including rights to reductions accruing after delivery of such aircraft), but not including any amounts that may be due from you to General Dynamics Corporation resulting from delayed delivery of such aircraft or from the delivery of any thereof to you prior to their completion or for any other reason, and (2) paying you amounts equivalent to the sum of your down payments on such aircraft, such amounts to be paid to you by a subordinated note (at an interest rate to be agreed upon) otherwise similar in terms to the interim subordinated 6 1/2% note of TWA presently held by you, except for the omission of the fourth paragraph thereof.

The acquisition of these aircraft would be conditional upon (1) necessary approvals of holders of our funded debt, (2) approval by the Civil Aeronautics Board, (3) our obtaining satisfactory financing therefor, and (4) approval thereof by TWA's Board of Directors.

Very truly yours,


A. V. Leslie

(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61).

EXECUTIVE OFFICES
TWENTY-SECOND FLOOR CULF BUILDING

HOUSTON 2, TEXAS

Deft EXHIBIT 1/10/62	10 JH
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RAYMOND M. HOLLIDAY
VICE PRESIDENT

June 10, 1961

TO:

Trans World Airlines, Inc.
380 Madison Avenue
New York 17, N. Y.

Attention: Mr. Charles C. Tillinghast, Jr.
President

Mr. Ernest R. Breech
Mr. Irving S. Olds
Mr. Raymond M. Holliday,
Voting Trustees

Irving Trust Company as Agent for the
holders of the Equipment Notes of
Trans World Airlines, Inc.

Attention: Mr. Robert S. Kerr,
Vice President

The Equitable Life Assurance Society
of the United States

Attention: Mr. James F. Oates, Jr.
Chairman and President

Metropolitan Life Insurance Company

Attention: Mr. Frederic W. Ecker,
Chairman

Gentlemen:

Referring to previous correspondence and conferences relating to the need of Trans World Airlines, Inc. (TWA), for additional jet aircraft, the financing thereof, the interests of Hughes Tool Company and its positions relating thereto, and in an

(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

effort to arrive at a solution of the various questions involved, Hughes Tool Company hereby submits three separate and distinct proposals. You may accept any one or any two or all three of said proposals. This is also to advise you that Mr. Chester C. Davis is authorized to discuss with you said proposals and is fully empowered by Hughes Tool Company to commit Hughes Tool Company with respect to any or all of said proposals.

PROPOSAL NUMBER ONE

Hughes Tool Company hereby offers to guarantee subscription by the stockholders of TWA to an offering of 100 million dollars of additional common stock of TWA (or such other equity security or securities as may be mutually agreed upon), such guarantee to be comparable to the one agreed upon in the Hughes Financing and Subordination Agreement of December, 1960, in that Hughes Tool Company will agree to subscribe to a pro rata share of any such new offering and will subscribe to any portion unsubscribed by the other stockholders of TWA up to a maximum amount of 100 million dollars.

Should you question the ability of Hughes Tool Company to perform or its good faith in submitting the offer represented by this proposal, Hughes Tool Company is prepared

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(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

to place in escrow securities of a value commensurate with such undertaking which would be forfeited in the event that Hughes Tool Company fails to perform in accordance with any obligation it undertakes pursuant to this proposal.

The foregoing proposal is open for consideration by you for a period of ten days from the date hereof. If, at the end of that period, you are favorably disposed to an acceptance of this proposal, but desire additional time for a definitive acceptance thereof, and so indicate in writing, Hughes Tool Company would give careful consideration to a reasonable request for an extension of time of the offer represented by this proposal.

It is not a condition of this proposal that TWA acquire, to supplement its fleet of jet aircraft, either Boeing aircraft or Convair aircraft or any combination thereof or any other type of aircraft. The foregoing offer, however, is conditioned upon termination of the existing voting trust with respect to the shares of common stock of TWA owned by Hughes Tool Company and the transfer and return of all of said shares to Hughes Tool Company.

In connection with your consideration of this proposal, Hughes Tool Company points out the following:

\ (a) Hughes Tool Company would guarantee to TWA an additional 100 million dollars of equity capital which would

(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

not only further secure the lending institutions, but would enable TWA to undertake an aggressive program for acquiring additional jet aircraft which, according to our understanding of your position, are unquestionably desired by TWA. Furthermore, with such additional equity capital, TWA should be able to obtain without difficulty adequate financing from the present lending institutions or others for expanding its present jet aircraft fleet with either Boeing aircraft or Convair aircraft or both as may be determined by the management of TWA.

(b) If this proposal is accepted, it would not be the intention of Hughes Tool Company to change the present management of TWA. The Mortgage Indenture of December 1960, securing the notes held by the lending institutions, contains provisions which, upon termination of the voting trust, adequately protect the noteholders with respect to the management of the Company. If this proposal is accepted, Hughes Tool Company will agree to the continuance of these provisions, which are sometimes called "the management clause", without change.

PROPOSAL NUMBER TWO

Hughes Tool Company, in addition to its having guaranteed the purchase from TWA of 100 million dollars of subordinated income debentures currently offered to the stockholders of TWA, hereby offers to subscribe to an additional \$11,235,900 principal amount of such debentures with warrants attached at the offering price thereof, payable in cash at the closing to be held Tuesday, June 13, 1961, provided that TWA will commit itself to acquire, and to apply said sum to

DX 77, page 5

(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

amounts heretofore paid by Hughes Tool Company or now due and payable by it to General Dynamics Corporation with respect to, 13 Model 990 (formerly Model 600) jet aircraft which were heretofore ordered by Hughes Tool Company from General Dynamics Corporation for the benefit of TWA and which are available to TWA, pursuant to that commitment by Hughes Tool Company, upon terms and conditions similar to the terms and conditions under which Hughes Tool Company has heretofore made aircraft available to TWA. Said terms and conditions are more fully described under Proposal Number Three.

PROPOSAL NUMBER THREE

Hughes Tool Company hereby reaffirms that it is prepared to assign to TWA, at Hughes Tool Company's cost in accordance with past practices of Hughes Tool Company, all rights to acquire from General Dynamics Corporation 13 Model 990 (formerly Model 600) aircraft under a purchase agreement dated November 10, 1960 as amended February 22, 1961 between Hughes Tool Company and General Dynamics Corporation. In addition, Hughes Tool Company reaffirms its willingness to make available or to cause to be made available to TWA on comparable terms four Convair Model 880's which, according to General Dynamics Corporation, will be available for delivery to TWA as follows: one in August, 1961; one in September, 1961 and two in October, 1961.

(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

Said four Convair 880's are in the process of completion by General Dynamics Corporation with the configuration designed by TWA. Upon the acceptance of this proposal Hughes Tool Company will use its best efforts to cause General Dynamics Corporation to make available, if TWA wishes to have them, an additional four Convair 880 M's for delivery at approximately the same time as the four Convair 880's. There is attached hereto, as a separate letter dated June 9, 1961, a more complete statement of this proposal..

You will notice that favorable consideration of Proposal Number Two hereinabove set forth requires action on your part on or before June 13, 1961, because Hughes Tool Company is informed that the availability of the debentures may expire on that date. If you feel that you need additional time to consider Proposal Number Two, Hughes Tool Company is prepared to discuss with you the feasibility of extending such time and to take such action as may be appropriate toward that end.

In order to expedite favorable consideration by you of the above, copies hereof are being delivered to Francis Reed, Esq., of Messrs. Hughes, Hubbard, Blair & Reed, counsel for the voting trustees and to Messrs. Chadbourne, Parke, Whiteside & Wolff, counsel for TWA. Mr. Reed has also been requested to communicate to appropriate individuals, by telephone or otherwise, as promptly as possible the substance of

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(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

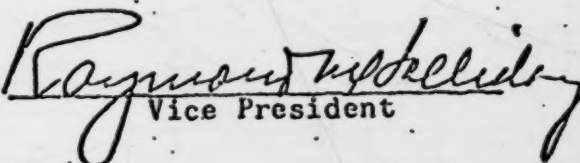
the above.

Mr. Chester C. Davis, who is empowered to discuss all or any of the above proposals and to take whatever action is necessary to commit Hughes Tool Company with respect thereto, will be continually available to you during the next ten days.

Very truly yours,

HUGHES TOOL COMPANY

By


Vice President

(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

EXECUTIVE OFFICES
TWENTY-SECOND FLOOR GULF BUILDING

HOUSTON 2, TEXAS

RAYMOND H. HOLLIDAY
VICE PRESIDENT

June 9, 1961

Trans World Airlines, Inc.
380 Madison Avenue
New York 17, N. Y.Attention: Mr. Charles C. Tillinghast, Jr.
President

Dear Sirs:

Referring to the representations made by Mr. Chester C. Davis on behalf of the Hughes Tool Company at a conference held the afternoon of June 2, 1961, this will confirm that Hughes Tool Company has currently on order from General Dynamics Corporation thirteen (13) Model 990 (formerly Model 600) aircraft which are available to Trans World Airlines, Inc. (TWA). Hughes Tool Company claims that TWA is obligated to acquire said aircraft in accordance with past practices. Said 13 aircraft are being manufactured by General Dynamics Corporation under a Purchase Agreement dated November 10, 1960, as amended February 22, 1961 (said Agreement as so amended being hereafter referred to as the "Purchase Agreement"). The Purchase Agreement provides for the delivery of the first of said aircraft in December, 1961 and of the remaining aircraft at the rate of 3 per month thereafter through April, 1962. You should note, however, that such delivery schedule is contingent upon certain

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(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

customer equipment being furnished to General Dynamics Corporation by a specified date, and that in order to maintain said delivery schedule immediate action is required by TWA. Hughes Tool Company assumes that you are fully familiar with said Purchase Agreement. If you do not have a copy thereof, you may inspect same at the offices of Chester C. Davis, 120 Broadway, Room 3113, New York, New York, or upon request a duplicate copy will be furnished to you.

Hughes Tool Company hereby reaffirms that it is prepared to assign to TWA all of its rights to acquire said aircraft pursuant to the Purchase Agreement, in accordance with past practices, namely, in consideration of an agreement by TWA to pay:

(1) The balance of the purchase price of said aircraft;

(2) All amounts hereafter payable for customer-furnished equipment installed or to be installed in said aircraft; and

(3) The undepreciated cost of said aircraft to Hughes Tool Company.

As in the past, the phrase "the undepreciated cost to Hughes Tool Company" means the sum of:

(a) All amounts Hughes Tool Company shall have paid the vendors (in cash or with notes) with respect

(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

to said aircraft including amounts paid vendors of customer-furnished equipment;

(b) All other costs; including expenses in connection with the aircraft or other related property; and

(c) An amount representing interest on items (a) and (b) at the rate of 5-1/2% per annum, computed on the average amount of the outstanding payments applicable to such aircraft and by considering the payments made as outstanding from the respective dates such payments were made and until repayment thereof to Hughes Tool Company.

With respect to the suggestion made by Mr. Tillinghast at the abovementioned conference concerning adequate assurances as to the delivery dates of such aircraft, Hughes Tool Company believes that this is a matter which should be discussed between TWA and General Dynamics Corporation. Hughes Tool Company is prepared to participate in any such discussions and to assist TWA to the extent possible in obtaining appropriate assurances from General Dynamics Corporation. In this connection TWA should recognize that, in accordance with past practices and prior to the change in management of TWA, it was customary for qualified personnel of TWA to be made available to General Dynamics Corporation as a contract representative or otherwise.

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(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

for the purpose of complying with the requirements of any purchase agreement and to assist in and expedite the ultimate delivery of the aircraft covered by such purchase agreement.

As to the terms of payments or payment dates to be made or met by TWA to Hughes Tool Company upon the assumption by TWA of the Purchase Agreement, Hughes Tool Company is prepared to discuss same with TWA at any time. Hughes Tool Company is also willing to furnish to TWA any further information available to Hughes Tool Company which TWA requires with respect to said aircraft and with respect to the advantages which Hughes Tool Company believes would inure to the benefit of TWA from the acquisition of said aircraft by TWA. Hughes Tool Company understands that General Dynamics Corporation is prepared to join in or otherwise cooperate in the assignment of the Purchase Agreement to TWA.

In addition to the above, Hughes Tool Company reaffirms its willingness to make available or to cause to be made available to TWA, on comparable terms, 4 Convair 880's which, according to General Dynamics Corporation, would be available for delivery to TWA as follows:

One in August, 1961
One in September, 1961
Two in October, 1961

The said 4 Convair 880's are in the process of completion with the configuration designed by TWA.

(Letters - Toolco to TWA re Financing Additional Jets, 6/9-10/61)

Furthermore, upon the assumption by TWA of the Purchase Agreement Hughes Tool Company would use its best efforts to cause General Dynamics Corporation to make available to TWA an additional 4 Convair 880 M's for delivery at approximately the same time as the 4 Convair 880's hereinabove mentioned.

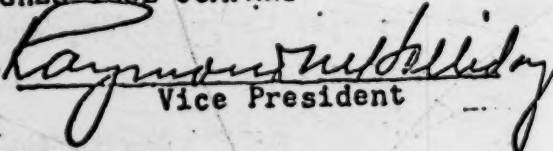
The availability to TWA of the above mentioned aircraft depends upon immediate action by TWA.

In order to avoid any further delay in making available to TWA the 13 Model 990 aircraft and in order to insure the availability thereof to TWA, will you please indicate your willingness to accept an assignment of the Purchase Agreement by having a duly authorized officer of TWA execute in the space hereinbelow provided a duplicate of this letter enclosed for that purpose and return same to the undersigned or to Chester C. Davis, 120 Broadway, Room 3113, New York, New York.

Very truly yours,

HUGHES TOOL COMPANY

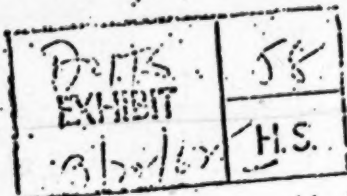
By


Vice President

ACCEPTED:

TRANS WORLD AIRLINES, INC.

By _____



June 16, 1961

Mr. Raymond M. Holliday
Hughes Tool Company
Gulf Building
Houston 2, Texas

Dear Mr. Holliday:

This will acknowledge receipt of your letter of June 10, 1961, outlining several proposals. I also have your supplementary letter of June 13, 1961.

As I am sure you appreciate, these proposals are of such a nature as to require consideration by the full board or directors of TWA and, in view of this, it will not be possible for me to give you any definitive answers prior to the next scheduled meeting of the Board on June 21, 1961. In the interests of time, however, I would like to make a number of preliminary comments relative to various issues which appear to be presented by your proposals.

Your proposal relative to increasing the Common Stock of TWA is a new one and will have our careful consideration. TWA has suffered greatly from its under-capitalization of the past and we would wish to take every reasonable step to achieve an improvement in our debt-equity ratio.

It clearly will not be possible to dispose of the equity financing proposal within the ten day period suggested in your letter. As you undoubtedly realize, any refinancing under the conditions suggested would require not only the agreement of Hughes Tool Company, TWA and the holders of TWA's senior debt but, in addition, would require approval by the Civil Aeronautics Board. From the standpoint of TWA, it is difficult to see why an arrangement of this type would not be just as valid several months from today as now. Possibly, I misunderstand some of the factors involved but, at the moment, it would appear that the proposal should

(Letter-TWA to Holliday re Financing Proposals, 6/16/61)

Mr. Raymond M. Holliday

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6/16/61

be dealt with deliberately and carefully and not under any unnecessary pressure of time.

I have proceeded and will proceed, within the bounds that time permits, to assemble such information as I believe necessary for an intelligent consideration by the Board of Directors and others of the equity financing proposal. You can be of assistance in furnishing further details with respect to your proposals as from time to time elaboration may seem desirable. At this time I believe further information is required in two areas of your first proposal. They are:

(a) You should advise us as to what securities Hughes Tool Company proposes to place in escrow and, in particular, whether such securities would include the recently issued subordinated debentures of TWA. Obviously, the nature of the securities in question are factors which need to be considered.

(b) Your proposal is conditioned upon termination of the existing Voting Trust. It is my understanding that the lending institutions insisted upon a Voting Trust, in addition to the "management clause", as a necessary condition to making loans to TWA at the end of 1950 and that this decision was reached only after the matter had been considered at great length. We cannot, with any realistic hope of success, ask the lending institutions to reverse an important policy decision made less than six months ago, unless you can supply us with facts not now in our possession. These facts should consist of an expression from you of the reasons which prompt Hughes Tool Company to seek at this time the termination of the Voting Trust and of the changes, internal to Hughes Tool Company or otherwise, which have occurred and will continue which would make desirable now that which was undesirable to them in December, 1960. The mere statement that Hughes Tool does not now intend to change the management is, of course, not sufficient, for otherwise you would not at this time request the termination of the Voting Trust.

Facts with respect to these changes, internal to Hughes Tool Company or otherwise, have particular significance in connection with future financing. Since the establishment of the Voting

(Letter-TWA to Holliday re Financing Proposals, 6/16/61)

Mr. Raymond M. Holliday

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6/16/61

Trust was an essential condition to our obtaining our existing loans of \$165,000,000, they have been stated to us as obvious requirements of any future financing, unless the causes for the establishment of the Voting Trust have been removed. Present indications are that substantial financing will be needed in the next few years additional to the equity proposed to be added.

You are mindful, I know, that stability of management is an important element in the receipt of credit, and that this is particularly so in the instance of a company whose past history has been marked by a high degree of instability. It is also particularly true of a carrier whose only available security is a chattel having a relatively high depreciation rate and being subject to abnormal risks of obsolescence.

Further in this connection, we cannot ignore the fact that the vesting of control of TWA in Hughes Tool Company will require the approval of the Civil Aeronautics Board. In light of the clear statements of the CAB in connection with such control, it would be foolish as practical businessmen to spend time and effort in seeking to carry out your proposal without some facts that would lead us to believe that there was a reasonable chance of success in this forum. You should furnish us with the information you would propose to present to the CAB in support of your application to reassume control.

Turning to proposal number two, Mr. Rowe explained to Mr. Davis the obvious impracticability of obtaining on a day's notice an answer to this proposal. You have expressed a willingness to extend the period of time. The mechanics of achieving the desired result, should the parties reach agreement, would not seem to present any serious problems. Consequently, I shall discuss the merits of the proposal.

It would hardly seem that an offer to loan TWA an additional \$11,235,900 would be sufficient at this late date to induce TWA to purchase the Convair 990s in question. We have reviewed the points raised by Mr. Davis' technical presentation and have not yet perceived any circumstances which should lead us to alter our views as to the superiority of the Boeings for our purposes. The question will again be reviewed by the directors, but I cannot be optimistic that the proffered inducement will be sufficient to cause a change in

(Letter-TWA to Holliday re Financing Proposals, 6/16/61)

Mr. Raymond M. Holliday

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6/16/61

Addressing myself to proposal number three, we are happy at least to have a more definite proposal than has heretofore been presented to us. It should be noted, however, that you have not even yet advised us of the purchase price of the planes, an obviously essential term. You have also failed to advise us of the form in which Hughes Tool Company would want payment for the assignment of its rights under the Purchase Agreement -- whether in cash or subordinated obligations or otherwise. These are all facts that, in addition to the relative advantages to TWA of the Convair 990s and other equipment, must be taken into consideration in weighing your proposal.

I note the claim on page one of your second letter that TWA is obligated to acquire the thirteen 990 aircraft "in accordance with past practices". Now that Hughes Tool Company has come to the point of making a flat assertion in this regard, I take the occasion unequivocally to deny it and to remind you that over a period of years both Hughes Tool Company and a TWA that was under its complete control consistently maintained to their creditors and stockholders and to government regulatory agencies that even as to aircraft subsequently acquired by TWA no such obligation existed. I also remind you that at none of the directors meetings in recent months at which the proposed Boeing purchase was discussed did you make any such claim or assertion.

I should also like to note that the assumption on page two of your second letter that we are fully familiar with the Hughes Convair purchase agreement is entirely in error.

You may consider this our final answer that we have no interest in the Convair 280Ms to which you referred. These would be four odd planes in our fleet and would, therefore, present serious operational problems. As to the regular 280s of our design, I would repeat (without any commitment whatsoever) the request already made several times by Mr. Leslie that you present us with a

DX 78, page 5
(Letter-TWA to Holliday re Financing Proposals, 6/16/61)

Mr. Raymond M. Holliday

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6/16/61

definite proposal, including price. I would also welcome your advice as to whether you would be prepared to rent these planes. If so, the terms should be clearly stated.

Please let us have answers to our various questions at an early date. The matters relating to the purchase of airplanes should have been raised and discussed months ago and the time within which further discussions could lead to any practical results is rapidly disappearing.

Very truly yours,

TRANS WORLD AIRLINES, INC.

Charles C. Tillinghast, Jr.,
President

cc: C. S. Rowe, Esq.

bc: Messrs. E. R. Breech
Irving S. Olds
F. C. Reed

~~Purchase Agreement~~

BETWEEN

BOEING AIRPLANE COMPANY

AND

PAN AMERICAN WORLD AIRWAYS, INC.

==

Relating to Boeing Model 707 Aircraft

Dated October 13, 1955

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PURCHASE AGREEMENT
Relating to
BOEING MODEL 707 AIRCRAFT

THIS AGREEMENT entered into this 13th day of October, 1955, by and between **BOEING AIRPLANE COMPANY**, a Delaware corporation, with its principal office in the City of Seattle, State of Washington (hereinafter called Boeing) and **PAN AMERICAN WORLD AIRWAYS, INC.**, a New York corporation, with its principal office in the City of New York, State of New York (hereinafter called Buyer);

WITNESSETH:

WHEREAS, Buyer desires to obtain by purchase aircraft of the type hereinafter described for the transportation of passengers, mail, express and cargo, and Boeing desires to manufacture and sell the same to Buyer;

Now, THEREFORE, in consideration of the mutual covenants herein contained the parties hereto agree as follows:

ARTICLE 1. Subject Matter of Sale.

Boeing shall manufacture, sell and deliver to Buyer, and Buyer shall purchase from Boeing, the following:

(a) Twenty (20) Boeing Model 707 aircraft (hereinafter called Aircraft) to be manufactured by Boeing in accordance with the terms of this Agreement and the detail specification (hereinafter called Detail Specification) set forth in Exhibit A attached hereto and made a part hereof; and

(b) Spare parts for the Aircraft, as more particularly set forth in Exhibit B hereto.

ARTICLE 2. Delivery of Aircraft.

(a) Each Aircraft shall be delivered to Buyer assembled and completed ready for flight, and the Buyer shall accept delivery of such Aircraft, at a suitable airport in the State of Washington to be selected by Boeing. Upon written request of Buyer, delivery shall be made at a location in the United States other than the State of Washington to be determined by mutual agreement (except with respect to the Aircraft referred to in paragraph (d) below, at a suitable airport in the United States designated by Buyer) and set forth in a Change Order executed in accordance with Article 11 hereof, which shall also provide for the payment to Boeing by Buyer of an amount representing Boeing's increased costs occasioned thereby. The Aircraft shall be delivered during or before the months set forth in the following schedule:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
December 1958.....	2
January 1959.....	2
February 1959.....	1
March 1959.....	1
April 1959.....	2
May 1959.....	2
June 1959.....	2
July 1959.....	1
August 1959.....	2
September 1959.....	2
October 1959.....	2

DX 79, page 4
(Pan American-Boeing Purchase Agreement-B707-120s, 10/13/55)

Boeing agrees, however, to the extent practicable, to use its best efforts to accelerate deliveries of Aircraft under this Agreement, and particularly shall use its best efforts to deliver the first four Aircraft, and the Aircraft referred to in paragraph (d) of this Article, by two months earlier than otherwise provided for in this Agreement.

(b) In the event Boeing gives Buyer at least seven (7) days' notice that it is ready to deliver any Aircraft hereunder, and at the fault or upon the responsibility of Buyer delivery thereof is delayed, Buyer shall promptly reimburse Boeing for all cost or expense, including without limitation reasonable amounts for storage, insurance, preservation and protection, sustained by Boeing resulting from any such delay in excess of one (1) week.

(c) Boeing agrees that

(i) at least six (6) of the Aircraft, duly certificated by the Civil Aeronautics Administration, shall be delivered to Buyer prior to delivery of any Civil Aeronautics Administration ~~certificated~~ Model 707 type commercial aircraft to any other customer; and

(ii) the Aircraft referred to in paragraph (d) of this Article shall be delivered to Buyer prior to delivery of any Model 707 type commercial aircraft to any other customer.

(d) Boeing shall deliver, and Buyer shall accept delivery of, one of the Aircraft in October 1958, notwithstanding that a Civil Aeronautics Administration Type Certificate has not been issued for the Boeing Model 707 type aircraft, for use by Buyer for flight and maintenance training instruction and proving and test purposes. It is intended that such Aircraft shall be one of the Aircraft scheduled for delivery during the month of June 1959 as provided in paragraph (a) of this Article, but in any event the delivery schedule set forth in said paragraph (a) shall be retained with respect to the delivery of Civil Aeronautics Administration certificated Aircraft.

(e) Buyer will, not earlier than five (5) days and not later than sixty (60) days after delivery to Buyer of the second Aircraft to be certificated by the Civil Aeronautics Administration with an Airworthiness Certificate in the transport category in scheduled air carrier service, return said first delivered Aircraft referred to in paragraph (d) above to Boeing at a suitable location in the State of Washington designated by Boeing, and Boeing shall promptly incorporate in said Aircraft all of the changes or alterations referred to in Article 11(e) and in Article 12 hereof which were not incorporated in said Aircraft at the time of delivery thereof to Buyer. The cost of such changes or alterations shall be borne as provided in the article pursuant to which said change or alteration is made. Boeing shall promptly deliver such Aircraft to Buyer after incorporation therein of such changes or alterations. Notwithstanding the foregoing provisions of this paragraph, in the event Buyer does not desire to return said Aircraft to Boeing for incorporation therein of such changes or alterations and if Boeing agrees thereto, Boeing will, promptly after receipt of Buyer's purchase orders therefor, sell and deliver to Buyer, without charge to Buyer, all necessary kits of parts to accomplish such changes or alterations to such Aircraft, and, in such event, said Aircraft shall be deemed, for the purposes of this Agreement, to have been delivered, provided that the provisions of this paragraph (e) shall not relieve Boeing of its obligation to obtain an Airworthiness Certificate for said Aircraft as provided in this Agreement.

(f) In the event Boeing shall not have obtained a Type Certificate for the Model 707 aircraft on or before December 31, 1958, Buyer shall have the right to redeliver to

Boeing the Aircraft referred to in paragraph (d) above at any time after said date and prior to the issuance of the Type Certificate, and at the time of such redelivery said Aircraft shall be in as good condition as when received from Boeing, reasonable wear and tear excepted. Upon such redelivery of said Aircraft, title to and risk of loss of or damage to such Aircraft shall revert to Boeing, and Boeing shall promptly repay to Buyer the amount paid by Buyer to Boeing at the time of delivery thereof. Upon any such redelivery and repayment, it shall be deemed that no delivery of said Aircraft has theretofore been made by Boeing to Buyer hereunder, and Boeing shall thereafter deliver said Aircraft to Buyer in accordance with the delivery schedule set forth in paragraph (a) hereof and all of the other terms of this Purchase Agreement.

ARTICLE 3. *Price of Aircraft.*

(a) The basic price of each Aircraft shall be Four Million Four Hundred and Six Thousand Eight Hundred and Twenty One Dollars (\$4,406,821), increased or decreased on account of price changes specified in Change Orders executed in accordance with Article 11 hereof.

(b) The purchase price of each Aircraft shall be the basic price adjusted as follows:

(i) It shall be increased or decreased by the aggregate excess over or deficiency under the prices in the Escalation List, set forth in Exhibit B attached hereto and made a part hereof, of the cost to Boeing of the items in such list included in that Aircraft. Boeing represents that the prices set forth in the Escalation List were used by Boeing as the cost of such items in arriving at the basic price of the Aircraft. Boeing shall use its best efforts to obtain such items at prices which are reasonable under the circumstances and shall notify Buyer as to the firm prices for such items as soon as possible but in any event before March 31, 1956; provided, that in the event such firm prices are not available upon the above date, Boeing shall advise Buyer as soon as such prices are available.

(ii) In the event that on April 5, 1956, Boeing shall be obligated by firm contract to sell to purchasers, including Buyer but excluding the United States Government or any agency thereof, at least sixty-five (65) Model 707 aircraft (substantially identical to the Aircraft described in Exhibit A or Exhibit C hereto except for items required for overseas flights and except for interior passenger equipment and appointments insofar as the differences do not require any structural or system changes) the basic price of each Aircraft hereunder shall be reduced by the amount of Two Hundred Thousand Dollars (\$200,000).

(iii) The basic price of each Aircraft shall be decreased by the amount by which \$4,300,000 (or, in the event at the time below mentioned at least sixty-five (65) Model 707 aircraft are under firm sale contracts, \$4,100,000) exceeds the lowest basic price by which Boeing, at any time prior to the sale by Boeing of one hundred (100) aircraft of such type (including the Aircraft sold hereunder), may have sold or contracted to sell any complete Boeing passenger Model 707 aircraft to other purchasers, except the United States Government or any agency thereof, after appropriate adjustment for changes from the standard Model 707 aircraft of basic configuration.

(c) At least ten (10) days prior to the delivery date of each Aircraft, Boeing shall give to Buyer a written notice stating the increase or decrease in the basic price of such Aircraft by reason of the operation of the provisions contained in paragraph (b) (i) above, and a summary in such reasonable detail as the Buyer may require of the factors occasioning such

(Pan American-Boeing Purchase Agreement-B707-120s, 10/13/55)

increase or decrease. At the request of Buyer, Boeing shall at reasonable intervals (but not oftener than quarterly) during the manufacture of the Aircraft advise Buyer of the estimated amount of adjustment in the basic price of each Aircraft resulting from the application of paragraph (b) (i) above.

Article 4. Taxes.

(a) In addition to the purchase price of the Aircraft and Spare Parts, Buyer shall pay to Boeing, upon demand, any sales, use, gross receipts or excise taxes required to be paid by Boeing as a result of any sale, use, delivery, storage (after tender of delivery in accordance with the provisions hereof) or transfer under this Agreement of any of the Aircraft, Spare Parts, services, instructions and data furnished or delivered hereunder, except any such taxes which Boeing or Buyer may be required to pay as a result of redelivery of an Aircraft by Buyer to Boeing pursuant to Article 2(f) hereof the liability for which shall be borne by Boeing.

(b) If claim is made against Boeing for any such tax, Boeing shall promptly notify Buyer. If seasonably requested by Buyer in writing, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct with respect to such asserted liability, and shall not pay such tax except under protest, if protest is necessary. If payment be made, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct to recover such payment and shall, if requested, permit Buyer in Boeing's name to file claim or commence an action to recover such payment.

Article 5. Payment.

(a) *Advance Payments for Aircraft.* Buyer shall pay to Boeing as advance payments on the Aircraft to be purchased hereunder, in accordance with the following schedule (each percentage represents an amount equal to that percentage of the aggregate basic price of the Aircraft):

<u>Due Date of Payment</u>	<u>Amount</u>
10 days after date of this Agreement.....	1%
January 25, 1956.....	4%
April 1, 1956.....	2%
July 1, 1956.....	2%
October 1, 1956.....	3%
January 1, 1957.....	3%
April 1, 1957.....	3%
July 1, 1957.....	3%
October 1, 1957.....	3%
January 1, 1958.....	3%
April 1, 1958.....	3%
July 1, 1958.....	3%

amounting to a total of 33% of the aggregate basic price of the Aircraft.

(b) *Payment for Aircraft.* Upon the delivery of each Aircraft to Buyer hereunder, Buyer shall pay the purchase price thereof as follows: There shall be credited against such purchase price an amount determined by dividing the aggregate of the amounts advanced by Buyer to Boeing under paragraph (a) above, less the aggregate amount of such advance payments previously credited against the purchase price of Aircraft delivered hereunder,

Purchase Agreement

BETWEEN

BOEING AIRPLANE COMPANY

AND

PAN AMERICAN WORLD AIRWAYS, INC.

==

Relating to Boeing Model 707-321 Aircraft

Dated December 19, 1955

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PURCHASE AGREEMENT

Relating to

BOEING MODEL 707-321 AIRCRAFT

THIS AGREEMENT entered into this 19 day of December, 1955, by and between BOEING AIRPLANE COMPANY, a Delaware corporation, with its principal office in the City of Seattle, State of Washington (hereinafter called Boeing) and PAN AMERICAN WORLD AIRWAYS, INC., a New York corporation, with its principal office in the City of New York, State of New York (hereinafter called Buyer);

WITNESSETH:

WHEREAS, Buyer desires to obtain by purchase aircraft of the type hereinafter described for the transportation of passengers, mail, express and cargo, and Boeing desires to manufacture and sell the same to Buyer;

Now, THEREFORE, in consideration of the mutual covenants herein contained the parties hereto agree as follows:

ARTICLE 1. Subject Matter of Sale.

Boeing shall manufacture, sell and deliver to Buyer, and Buyer shall purchase from Boeing, the following:

(a) Twelve (12) Boeing Model 707-321 aircraft (hereinafter called Aircraft) to be manufactured by Boeing in accordance with the terms of this Agreement and the detail specification (hereinafter called Detail Specification) set forth in Exhibit A attached hereto and made a part hereof; and

(b) Spare parts for the Aircraft, as more particularly set forth in Article 14 hereof.

ARTICLE 2. Delivery of Aircraft.

(a) Each Aircraft shall be delivered to Buyer assembled and completed ready for flight and the Buyer shall accept delivery of such Aircraft, at a suitable airport in the State of Washington to be selected by Boeing. Upon written request of Buyer, delivery shall be made at a location in the United States other than the State of Washington to be determined by mutual agreement and set forth in a Change Order executed in accordance with Article 11 hereof, which shall also provide for the payment to Boeing by Buyer of an amount representing Boeing's increased costs occasioned thereby. The Aircraft shall be delivered during or before the months set forth in the following schedule:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
August 1959	1
September 1959	2
October 1959	2
November 1959	2
December 1959	2
January 1960	2
February 1960	1

(Pan American-Boeing Purchase Agreement-B707-321s, 12/19/55)

Boeing agrees, however, to the extent practicable, to use its best efforts to accelerate deliveries of Aircraft under this Agreement.

(b) In the event Boeing gives Buyer at least seven (7) days' notice that it is ready to deliver any Aircraft hereunder, and at the fault or upon the responsibility of Buyer delivery thereof is delayed, Buyer shall promptly reimburse Boeing for all cost or expense, including without limitation reasonable amounts for storage, insurance, preservation and protection, sustained by Boeing resulting from any such delay in excess of one (1) week.

(c) Boeing agrees that at least five (5) of the Aircraft shall be delivered to Buyer prior to delivery of any Model 707-320 (Intercontinental) series commercial aircraft to any other customer.

ARTICLE 3. Price of Aircraft.

(a) The basic price of each Aircraft shall be Five Million Two Hundred Thirty-five Thousand Two Hundred and Eighty-six Dollars (\$5,235,286), increased or decreased on account of price changes specified in Change Orders executed in accordance with Article 11 hereof.

(b) The purchase price of each Aircraft shall be the basic price adjusted as follows:

(i) It shall be increased or decreased by the amount by which the cost to Boeing of the Automatic Pilot included in such Aircraft exceeds or is less than Twenty Seven Thousand Five Hundred Dollars (\$27,500) which Boeing represents was used by Boeing as the cost of such item in arriving at the basic price of the Aircraft. Boeing shall use its best efforts to obtain such item at a price which is reasonable under the circumstances and shall notify Buyer as to the firm price for such item as soon as possible but in any event before March 31, 1956; provided, that in the event such firm price is not available upon the above date, Boeing shall advise Buyer as soon as such price is available.

(ii) The basic price of each Aircraft shall be decreased by the amount by which \$5,250,000 exceeds the lowest basic price for which Boeing, at any time before Boeing shall have under order, by firm contracts of sale, one hundred (100) Model 707 aircraft (including the Aircraft sold hereunder), may have sold or contracted to sell any complete Boeing passenger Model 707-320 (Intercontinental) series aircraft (or any other aircraft of a type conforming to the basic engineering design of the Model 707-320 (Intercontinental) series except for body length) powered by Pratt & Whitney Model JT4 (J-75) type engines to any other purchaser, except the United States Government or any agency thereof, after appropriate adjustment for changes from the standard Model 707-320 (Intercontinental) series aircraft of basic configuration powered by such type engines.

(c) At least ten (10) days prior to the delivery date of each Aircraft, Boeing shall give to Buyer a written notice stating the increase or decrease in the basic price of such Aircraft by reason of the operation of the provisions contained in paragraph (b) (i) above, and a summary in such reasonable detail as the Buyer may require of the factors occasioning such increase or decrease. At the request of Buyer, Boeing shall at reasonable intervals (but not oftener than quarterly) during the manufacture of the Aircraft advise Buyer of the estimated amount of adjustment in the basic price of each Aircraft resulting from the application of paragraph (b) (i) above.

ARTICLE 4. Taxes.

(a) In addition to the purchase price of the Aircraft and Spare Parts, Buyer shall pay to Boeing, upon demand, any sales, use, gross receipts or excise taxes required to be paid by

(Pan American-Boeing Purchase Agreement-B707-321s, 12/19/55)

Boeing as a result of any sale, use, delivery, storage (after tender of delivery in accordance with the provisions hereof) or transfer under this Agreement of any of the Aircraft, Spare Parts, services, instructions and data furnished or delivered hereunder.

(b) If claim is made against Boeing for any such tax, Boeing shall promptly notify Buyer. If reasonably requested by Buyer in writing, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct with respect to such asserted liability, and shall not pay such tax except under protest, if protest is necessary. If payment be made, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct to recover such payment and shall, if requested, permit Buyer in Boeing's name to file claim or commence an action to recover such payment.

ARTICLE 5. Payment.

(a) *Advance Payments for Aircraft.* Buyer shall pay to Boeing as advance payments on the Aircraft to be purchased hereunder, in accordance with the following schedule (each percentage represents an amount equal to that percentage of the aggregate basic price of the Aircraft):

<u>Due Date of Payment</u>	<u>Amount</u>
10 days after date of this Agreement.....	1%
January 25, 1956.....	4%
April 1, 1956.....	2%
July 1, 1956.....	2%
October 1, 1956.....	3%
January 1, 1957.....	3%
April 1, 1957.....	3%
July 1, 1957.....	3%
October 1, 1957.....	3%
January 1, 1958.....	3%
April 1, 1958.....	3%
July 1, 1958.....	3%

amounting to a total of 33% of the aggregate basic price of the Aircraft.

(b) *Payment for Aircraft.* Upon the delivery of each Aircraft to Buyer hereunder, Buyer shall pay the purchase price thereof as follows: There shall be credited against such purchase price an amount determined by dividing the aggregate of the amounts advanced by Buyer to Boeing under paragraph (a) above, less the aggregate amount of such advance payments previously credited against the purchase price of Aircraft delivered hereunder, by the number of Aircraft remaining to be delivered (including the one being delivered), and Buyer shall pay to Boeing the difference between the amount of such credit and the basic price of such Aircraft adjusted pursuant to Article 3(b) hereof to the date of delivery of such Aircraft.

(c) *Payment in U. S. Funds.* All payments hereunder shall be made in lawful money of the United States, or by a cashier's check of a member bank, located in Seattle, Washington, of the United States Federal Reserve System, payable in such money.

(d) *Repayment of Advance Payments.* In any of the following events:

(i) delivery by Boeing to Buyer in accordance with the provisions of this Agreement of all of the Aircraft to be purchased hereunder;

(Pan American-Boeing Purchase Agreement-B707-321s, 12/19/55)

- (ii) termination of this Agreement by Buyer under Article 10(b) hereof;
- (iii) termination of this Agreement by either party under Article 10(c) hereof;
- (iv) termination of this Agreement by Buyer under Article 21 hereof as to any or all Aircraft and Spare Parts then undelivered hereunder; or
- (v) termination of this Agreement by Buyer by reason of a substantial default of Boeing in the performance of its obligations hereunder, if such default shall under the applicable law entitle Buyer to terminate this Agreement; provided, however, that no such default of Boeing hereunder shall entitle Buyer to terminate this Agreement or relieve Buyer of its obligations hereunder unless Boeing shall have failed to remedy such default within thirty (30) days after receiving notice thereof from Buyer;

then, in any such event, Boeing shall forthwith repay to Buyer the entire amount of the advance payments, if any, received by Boeing hereunder, less (1) the aggregate amount of such advance payments previously credited against the purchase price of Aircraft theretofore delivered to Buyer hereunder; (2) the amount determined to be due to Boeing from Buyer pursuant to the provisions of Article 10(b) hereof, if this Agreement is terminated by Buyer pursuant to said article; and (3) if this Agreement is terminated by Buyer under Article 21 hereof as to any, but not all, Aircraft and Spare Parts then undelivered hereunder, less the aggregate amount of such advance payments to be credited against the purchase price of any remaining Aircraft as to which this Agreement is not so terminated. In the event of termination of this Agreement by Buyer as provided in subparagraph (v) above, such repayment shall be without prejudice to any rights which Buyer may have under the applicable law.

ARTICLE 6. *Option to Purchase Additional Aircraft.*

In consideration of the payment by Buyer to Boeing, simultaneously with the execution of this Agreement, of the amount of Two Hundred Fifty Thousand Dollars (\$250,000), receipt of which is hereby acknowledged by Boeing, Boeing hereby grants to Buyer an option to purchase up to an additional ten (10) Model 707-321 aircraft conforming to the Detail Specification, subject to all of the provisions of this Agreement except as otherwise specifically provided in this Article 6, said additional aircraft to be delivered by Boeing to Buyer during or before the months set forth in the following schedule in the event of the exercise of such option:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
March 1960	2
April 1960	1
May 1960	2
June 1960	1
July 1960	2
August 1960	1
September 1960	1

It is understood that Boeing has reserved for delivery to another customer or customers three (3) Model 707-320 (Intercontinental) series aircraft to be delivered at the rate of one (1) aircraft per month during the months of February, April and June, 1960, respectively, and in the event Boeing does not enter into a firm agreement or agreements with such other customer or customers with respect to any one of such aircraft, Boeing will accelerate the schedule indicated above so as to deliver one (1) additional aircraft during the month for

which delivery of such aircraft has been so reserved and one (1) aircraft shall be removed from the end of such schedule for each aircraft as to which the schedule for delivery is so accelerated. Upon request from Buyer at any time prior to January 15, 1956, Boeing shall promptly notify Buyer by telegraph as to whether it has entered into a firm agreement or agreements with such other customer or customers for the sale of any one (1) or more of such three (3) aircraft. Such option may be exercised by Buyer by giving notice to Boeing not later than January 15, 1956. If such option is exercised as to less than all of the additional ten (10) aircraft referred to above, the additional aircraft to be so purchased shall be those aircraft scheduled for earliest delivery as specified above in this Article 6. In the event of the exercise of such option by Buyer as to one or more of such additional aircraft:

(a) Paragraph (a) of Article 1 of this Agreement shall be deemed amended so as to increase the number of Aircraft to be purchased hereunder by the number of aircraft as to which the option is so exercised.

(b) The first advance payment in the amount of one percent (1%) of the aggregate basic price of such additional aircraft as to which the option is so exercised shall be paid by Buyer to Boeing ten (10) days after the date of exercise of the option, the second such payment in the amount of four per cent (4%) of such aggregate basic price shall be paid by Buyer to Boeing on or before March 1, 1956, and the remaining advance payments, commencing with the payment due on April 1, 1956, shall be made in accordance with the provisions of paragraph (a) of Article 5 of this Agreement; provided, that the amount of Two Hundred and Fifty Thousand Dollars (\$250,000) paid by Buyer to Boeing in accordance with the foregoing provisions of this Article 6 shall be credited against the first advance payments to be made with respect to such aircraft until the full amount has been so credited.

ARTICLE 7. Warranty.

(a) Boeing agrees, represents and warrants that the Boeing Model 707-321 type aircraft will be certificated by the Civil Aeronautics Administration with a Type Certificate and that each Aircraft, prior to and at the time of delivery thereof, will be certificated by the Civil Aeronautics Administration with an appropriate Airworthiness Certificate in the transport category, in scheduled air carrier service, within the meaning of the Civil Air Regulations issued by the Civil Aeronautics Board, at takeoff and landing weights which will permit compliance with the performance guarantees set forth in the Detail Specification and under the conditions set forth therein; but said Aircraft need not meet the Civil Aeronautics Administration requirements for specific operation or operations on Buyer's routes. Boeing further agrees, represents and warrants that, prior to and at the time of delivery of each of the Aircraft, there will be in effect a release from the appropriate agency or agencies of the United States Government of the engines described in the Detail Specification, so as to permit installation of such engines in the Aircraft and delivery of the Aircraft (with such engines installed) to Buyer for use on its certificated air routes.

(b) Boeing agrees, represents and warrants that each Aircraft and Spare Part delivered under this Agreement shall, at the time of delivery thereof to Buyer, conform to the Detail Specification (excepting such portions of the Detail Specification as are stated not to be guaranteed by Boeing and subject to such changes therein as are made pursuant to Article 11 hereof entitled "Changes") and shall be free from defects in material and workmanship, and from defects or faults in design in view of the state of the art at the time of design thereof. Such warranty shall not apply to Buyer-Furnished Equipment or to accessories, equipment or parts purchased by Boeing unless they are manufactured pursuant to Boeing's detailed

BOEING AIRPLANE COMPANY
SEATTLE 14, WASHINGTON

TELEPHONE MORGAN 3333
IN REPLY REFER TO

December 19, 1955

Pan American World Airways, Inc.
135 East 42nd Street
New York 17, New York

Attention: Mr. Franklin Gledhill,
Vice President

Subject: PAA/Boeing Purchase Agreement dated October 13, 1955
Re Model 707 Aircraft, and Purchase Agreement Re
Model 707-321 Aircraft

Dear Sirs:

We are enclosing herewith four (4) execution copies of each of the following proposed agreements between Boeing Airplane Company and Pan American World Airways, Inc., which agreements have been executed on behalf of Boeing:

A. Supplemental Agreement No. 2 to the Purchase Agreement dated October 13, 1955 between our respective companies, relating to Boeing Model 707 aircraft, reducing the number of Aircraft to be purchased by Pan American thereunder from twenty (20) to ten (10) and amending the Purchase Agreement in certain other respects.

B. Purchase Agreement relating to the purchase by Pan American of twelve (12) Boeing Model 707-321 aircraft.

C. Letter Agreement relating to the Purchase Agreement referred to in B above, and entitled "PAA/Boeing Model 707-321 Purchase Agreement - Assignment to Foreign Airlines and PAA Special Features".

This letter, when accepted by you and returned to us with copies of the above mentioned agreements executed on behalf of Pan American, will evidence our further agreement with respect to the following matters:

1. The rights granted to Pan American in accordance with provisions of Article 19(c) of the Purchase Agreement dated October 13, 1955, as amended by Supplemental Agreement No. 2,

Pan American World Airways, Inc.

December 19, 1955

are in addition to the rights granted to Pan American in accordance with the provisions of paragraph 2 of the Letter Agreement referred to in C above.

2. In regard to the provisions of paragraph 1 of Supplemental Agreement No. 2 to the Purchase Agreement dated October 13, 1955, reducing the number of Aircraft to be purchased thereunder from twenty (20) to ten (10), it is understood and agreed that the amount by which the first advance payment heretofore paid by Pan American to Boeing pursuant to Article 5(a) of said Purchase Agreement exceeds one percent (1%) of the aggregate basic price of the ten (10) Aircraft to be purchased under said Agreement, amended as provided in Supplemental Agreement No. 2 thereto, shall be credited against the first advance payment due from Pan American to Boeing pursuant to the provisions of Article 5(a) of the Purchase Agreement relating to the Model 707-321 aircraft.

3. Paragraph 3 of the Letter Agreement between our respective companies dated November 8, 1955, relating to the Purchase Agreement dated October 13, 1955, is revised in its entirety to read as follows:

"3. If delivery of the first certificated Aircraft shall be delayed beyond December, 1958, by reason of the failure of the appropriate agency or agencies of the United States Government to grant a security release permitting installation in the Aircraft and delivery to Buyer of the engines described in the Detail Specification for use on Buyer's certificated air routes, Boeing shall pay to Buyer \$250,000 for each month of such delay after December, 1958. If the first certificated Aircraft shall be delivered prior to December, 1958, and if deliveries of the remaining certificated Aircraft shall follow, commencing with the next succeeding month, at a rate not less than specified for deliveries commencing in January, 1959, as set forth in paragraph (a) of Article 2 of the Purchase Agreement, as amended, Buyer shall pay to Boeing \$250,000 for each month by which the delivery of said first certificated Aircraft shall be prior to December, 1958. For the purpose of calculating any payment to be made pursuant to this paragraph 3, the day of delivery within a calendar month shall be disregarded and each calendar month shall be treated as one full month."

4. Boeing hereby grants to Pan American the following options, in addition to the right granted to Pan American to cancel the Purchase Agreement dated October 13, 1955, as provided in Article 2(g) of said Agreement as amended by Supplemental Agreement No. 2:

(a) Upon the exercise by Pan American, not later than January 15, 1956, of the option provided for in Article 6 of the Purchase Agreement relating to the Model 707-321

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(Pan American-Boeing Purchase Agreement-B707-321s, 12/19/55)

Pan American World Airways, Inc.

December 19, 1955

aircraft, to the extent of five (5) or more additional Model 707-321 aircraft, Pan American shall have the further right without Boeing's consent,

(1) in addition to the rights set forth in the Letter Agreement entitled "PAA/Boeing Model 707-321 Purchase Agreement - Assignment to Foreign Airlines and PAA Special Features", referred to in paragraph C above, and

(11) notwithstanding any limitations contained in the Purchase Agreement dated October 13, 1955,

to resell, lease, transfer, or assign its rights with respect to the first six (6) Aircraft to be purchased under the Purchase Agreement dated October 13, 1955, as amended.

(b) Pan American shall have the option, exercisable by giving written notice to Boeing on or before February 4, 1956, to elect to substitute for the Detail Specification attached to the Purchase Agreement dated October 13, 1955, as Exhibit A:

(1) the American Airlines detail specification provided for in the definitive contract between Boeing and American Airlines (Boeing agreeing to use its best efforts to obtain such detail specification, and submit a copy thereof to Pan American, by January 15, 1956), except that the requirements for Pan American's overseas operations set forth in its Detail Specification shall be retained; or

(11) the said American Airlines detail specification referred to (1) above, except that said overseas requirements and the Pan American interior configuration and colors shall be retained; provided, that the doors, windows and systems, other than those required for Pan American's overseas operations, shall conform to the American Airlines configuration.

Boeing's prices for such substitutions shall not exceed those charged to American Airlines.

(a) Provided Pan American shall have exercised its option to cancel the Purchase Agreement dated October 13, 1955, as to one (1) or more of the last four (4) Aircraft to be delivered thereunder, as provided in Article 2(g) of said Agreement as amended by Supplemental Agreement No. 2, and provided Pan American shall have exercised the option provided for in subparagraph (b) above, upon written notice given to Boeing by Pan American at any time on or before February 4, 1956, Boeing agrees that:

December 19, 1955

(1) it will, upon written request of American Airlines, enter into an amendment to its contract with American Airlines to accelerate deliveries of Model 707 aircraft thereunder, so as to deliver one (1) additional Aircraft thereunder during each month in which an Aircraft, as to which the Purchase Agreement dated October 13, 1955 has been cancelled pursuant to the provisions of Article 2(g) thereof, was scheduled for delivery to Pan American, and terminate such contract as to one (1) of the aircraft scheduled for later delivery to American Airlines thereunder, and

(ii) it will enter into an amendment to the Purchase Agreement dated October 13, 1955, to provide for the return to Boeing of the first six (6) Aircraft to be delivered to Pan American thereunder, and the performance by Boeing of the modification work necessary to conform said Aircraft with the American Airlines configuration for its Model 707 aircraft, at Boeing's prices therefor which shall be reasonable; and

(iii) upon the written request of American Airlines, it will enter into an amendment to the contract between Boeing and American Airlines, revising the schedule for delivery of Model 707 aircraft so as to terminate such contract with respect to the last six (6) aircraft to be purchased thereunder.

The time for performance of the modification work referred to in (ii) above, and the terms and conditions thereof, shall be mutually satisfactory to Boeing and Pan American. The exercise of the option provided for in this subparagraph (c) is subject to Pan American giving written notice to Boeing at the time of or prior to the notice from Pan American referred to above, that it has entered into an agreement with American Airlines, pursuant to the rights granted to Pan American in accordance with the provisions of subparagraph (a) above, providing for the sale by Pan American to American Airlines of, or the assignment by Pan American to American Airlines of its rights with respect to, the first six (6) Aircraft to be delivered under the Purchase Agreement dated October 13, 1955, as amended.

5. The Letter Agreements entered into between our respective companies on October 13, 1955, relating to the Purchase Agreement dated October 13, 1955, shall remain in full force and effect, to the extent that the same have not heretofore been cancelled, except as follows:

(a) The Letter Agreement entitled "PAA/Boeing Model 707 Purchase Agreement - Options re Model JT4A-3 Engines", as amended, is hereby cancelled and all rights and obligations thereunder are terminated.

(b) With respect to the Letter Agreement entitled "PAA/Boeing Model 707 Purchase Agreement - Engines Prices and Availability of Model JT3D-5 Engines", paragraph 2 thereof and all references in said Letter Agreement and all

Pan American World Airways, Inc.

December 19, 1955

visions thereof relating to the Model JT4A-3 engines are hereby deleted.

(a) Paragraph 1 of the Letter Agreement entitled "PAA/ Boeing Model 707 Purchase Agreement - Assignment to Foreign Airlines and PAA Special Features" is hereby cancelled and all rights or obligations thereunder are terminated. The provisions of paragraph 1 of said Letter Agreement are superseded by the provisions set forth in paragraphs 1 and 2 of the Letter Agreement referred to in C above.

6. The letters dated October 13, 1955 (Nos. 550-0-141 and 550-0-150) from Boeing to Pan American shall remain in full force and effect, and none of the prices set forth therein for Boeing Model 707 Master Changes or Proposed Master Changes shall be subject to any increase by reason of the execution of Supplemental Agreement No. 2 to the Purchase Agreement dated October 13, 1955.

7. All notices required or permitted to be given in accordance with the provisions set forth above shall be given in accordance with the provisions of the Article entitled "Notices and Requests" set forth in the respective Model 707 and Model 707-321 Purchase Agreements.

8. Press releases and other publicity with respect to the enclosed agreements and the matters set forth above will be prepared jointly, for publication not earlier than the afternoon of December 22, 1955.

The enclosed agreements referred to in A, B, and C above, and the matters set forth above, constitute the amendment to the Purchase Agreement dated October 13, 1955, the definitive Model 707-321 Purchase Agreement and other related agreements referred to in the Memoranda of Understanding and Letter Agreement between our respective companies dated December 14, 1955, and supersede said Memoranda and Letter Agreement.

If the enclosed forms of Supplemental Agreement No. 2, Purchase Agreement and Letter Agreement, and the matters set forth above, are acceptable to you, will you please indicate your acceptance on the enclosed copy of this letter and return the same to us with two (2) copies of the Supplemental Agreement, Purchase Agreement, and Letter Agreement, executed on behalf of Pan American.

Very truly yours,

BOEING AIRPLANE COMPANY

Accepted: December 19th 1955

PAN AMERICAN WORLD AIRWAYS, INC.

J.B. Connolly
Director of Contract Administration

Purchase Agreement

between

BOEING AIRPLANE COMPANY

and

AMERICAN AIRLINES, INC.

Relating to Boeing Model 707-123 Aircraft

Dated March 1, 1956

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PURCHASE AGREEMENT

Relating to

BOEING MODEL 707-123 AIRCRAFT

THIS AGREEMENT entered into this First day of March, 1956, by and between BOEING AIRPLANE COMPANY, a Delaware corporation, with its principal office in the City of Seattle, State of Washington (hereinafter called Boeing) and AMERICAN AIRLINES, INC., a Delaware corporation, with its principal office in the City of New York, State of New York (hereinafter called Buyer):

WITNESSETH:

WHEREAS, Buyer desires to obtain by purchase aircraft of the type hereinafter described for the transportation of passengers, mail, express and cargo and Boeing desires to manufacture and sell the same to Buyer;

Now, THEREFORE, in consideration of the mutual covenants hereinafter contained the parties hereto agree as follows:

ARTICLE 1.***Subject Matter of Sale.***

Boeing shall manufacture, sell and deliver to Buyer, and Buyer shall purchase from Boeing, upon the terms and conditions hereinafter set forth, the following:

(a) Thirty (30) Boeing Model 707-123 aircraft (hereinafter called the Aircraft) to be manufactured by Boeing in accordance with the detail specification (No. D-17231, dated October 21, 1955, as revised to February 24, 1956 and identified by signature of the parties on the date hereof) set forth as Exhibit A attached hereto and hereby made a part hereof (such detail specification, as the same may be amended and modified from time to time pursuant to Article 11 hereof, being hereinafter called the Detail Specification), provided that Buyer shall at all times and from time to time by notice to Boeing prior to January 15, 1958 have the right to terminate, in reverse order of delivery and without charge, its obligation to purchase any one (1) or more of the last five (5) of such Aircraft to be delivered, as provided in paragraph (a) of Article 2 hereof; and

(b) Spare parts (as referred to in Article 14 hereof), together with the special tools and equipment therein referred to, for the Aircraft, as more particularly set forth in said Article 14.

ARTICLE 2.***Delivery of Aircraft.***

(a) Each Aircraft shall be delivered to Buyer in good operating condition, and Buyer shall accept delivery of such Aircraft, at a suitable airport in the State of Washington to be selected by Boeing or at such other place as may be mutually agreed upon by a Change Order providing for delivery at such

other place and for the payment to Boeing by Buyer of Boeing's increased costs, if any, occasioned thereby. The Aircraft shall be delivered during or before the months set forth in the following schedule:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
February, 1959	2
March, 1959	2
April, 1959	2
May, 1959	3
June, 1959	2
July, 1959	2
August, 1959	1
September, 1959	1
October, 1959	1
November, 1959	1
December, 1959	1
January, 1960	1
February, 1960	1
March, 1960	1
April, 1960	2
May, 1960	2
June, 1960	1
July, 1960	1
August, 1960	1
September, 1960	1
October, 1960	1

(b) In the event Boeing gives Buyer at least seven (7) days' notice that it is ready to deliver any Aircraft hereunder, and at the fault or upon the responsibility of Buyer delivery thereof is delayed, Buyer shall promptly reimburse Boeing for all cost or expense, including without limitation reasonable amounts for storage, insurance, preservation and protection, sustained by Boeing resulting from any such delay in excess of one (1) week.

(c) Boeing shall deliver, and Buyer shall accept delivery of, one of the Aircraft in November, 1958, notwithstanding that an appropriate Civil Aeronautics Authority Type Certificate has not been issued for the Aircraft, for use by Buyer for flight and maintenance training instruction and proving and test purposes. It is intended that such Aircraft shall be one of the Aircraft scheduled for delivery during the month of May, 1959, as provided in paragraph (a) of this Article, but in any event the delivery schedule set forth in said paragraph (a) shall be retained with respect to the delivery of Civil Aeronautics Authority certificated Aircraft.

(d) Buyer will, not prior to, and not later than fifteen (15) days after, delivery to Buyer of the notice provided for in paragraph (b) above, in respect to the first Aircraft to be certificated by the Civil Aeronautics Authority with an Airworthiness Certificate in the transport category in scheduled air carrier service, return said first delivered Aircraft referred to in paragraph (c) above to Boeing at a suitable location in the State of Washington designated by Boeing, and Boeing shall promptly incorporate in said Aircraft all of the changes or alterations referred to in Article 12 hereof which were not incorporated in said Aircraft at the time of delivery thereof to Buyer, the cost of such changes or alterations to be borne as therein provided. Boeing shall promptly deliver such Aircraft to Buyer after incorporation therein of such changes or alterations. Notwithstanding the foregoing provisions of this paragraph (d), in the event Buyer does not desire to return said Aircraft to Boeing for incorporation therein of such changes or alterations and if Boeing agrees thereto, Boeing will, promptly after receipt of Buyer's purchase orders therefor, sell and deliver to Buyer, without charge to Buyer, all necessary kits of parts to accomplish such changes or alterations to such Aircraft and will pay to Buyer all reasonable charges for incorporation of such kits of parts in such Aircraft, and, in such event, said Aircraft shall be deemed, for the purposes of this Agreement, to have been delivered, provided that the

provisions of this paragraph (d) shall not relieve Boeing of its obligation to obtain an Airworthiness Certificate for said Aircraft as provided in this Agreement.

(c) Prior to delivery of the first Aircraft hereunder (i) Boeing shall request the manufacturer of the engines to appraise the installation thereof in such Aircraft as accomplished by Boeing, and (ii) Boeing shall request the manufacturer of the automatic pilot and integrated flight system to appraise the installation thereof in such Aircraft as accomplished by Boeing. In the event that the installation of the engines or the automatic pilot and integrated flight system is changed on any Aircraft delivered after delivery of the first Aircraft hereunder or after any prior appraisal requested hereunder, Boeing will request the manufacturer thereof to appraise the installation as so changed. Boeing will furnish to Buyer copies of each such appraisal received by Boeing. Any failure of such engines or automatic pilot and integrated flight systems to operate in accordance with the manufacturer's specification therefor caused by any item of such installation which the manufacturer has, upon any such written appraisal, found unacceptable and set forth the reasons therefor, shall as between the parties hereto be deemed to be a failure of Boeing to comply with subdivisions (i), (ii) and/or (iii) of the last sentence of paragraph (b) of Article 7 hereof.

ARTICLE 3.

Price of Aircraft.

(a) The basic price of each Aircraft shall be Four Million Six Hundred Fifty-two Thousand Four Hundred Sixty Dollars (\$4,652,460), increased or decreased, as the case may be, by the net amount of all price changes specified in Change Orders applicable thereto executed in accordance with Article 11 hereof.

(b) The purchase price of each Aircraft shall be the basic price increased or decreased by the amount by which the cost to Boeing of the Automatic Pilot included in such Aircraft exceeds or is less than Twenty-seven Thousand Five Hundred Dollars (\$27,500), which Boeing represents was used by Boeing as the cost of such item in arriving at the basic price of the Aircraft. Boeing will use its best efforts to obtain such item at a price which is reasonable under the circumstances and will notify Buyer as to the firm price therefor as soon as possible.

(c) Boeing shall give to Buyer a written notice stating the increase or decrease in the basic price of the Aircraft by reason of the operation of the provisions contained in paragraph (b) above promptly after the occurrence thereof but in any event not less than ten (10) days prior to the delivery date of each Aircraft.

ARTICLE 4.

Taxes.

(a) In addition to the purchase price of the Aircraft, spare parts, special tools and equipment, Buyer shall pay to Boeing, upon demand, any sales or use taxes or the amount of any new or increased gross receipts or excise taxes required to be paid by Boeing as a result of any sale, use, delivery, storage or transfer under this Agreement.

(b) If claim is made against Boeing for any such tax, Boeing shall promptly notify Buyer. If reasonably requested by Buyer in writing, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct with respect to such asserted liability, and shall not pay such tax except under protest, if protest is necessary. If payment be made, Boeing shall, at Buyer's expense, take such action as Buyer may reasonably direct to recover such payment and shall, if requested, permit Buyer in Boeing's name to file claim or commence an action to recover such payment.

ARTICLE 5.

Payment.

(a) *Advance Payments for Aircraft.* Buyer shall pay to Boeing, as advance payments on all Aircraft to be purchased hereunder, in accordance with the following schedule (each percentage representing

(Boeing - AAL Purchase Agreement - B707-123s, 3/1/56)

amount equal to that percentage of the aggregate basic price of the maximum number of Aircraft that be purchased hereunder at the time such payment is made):

<u>Due date of Payment</u>	<u>Amount</u>
On or before date of this Agreement	5%
August 1, 1956	2%
November 1, 1956	2%
February 1, 1957	3%
May 1, 1957	3%
August 1, 1957	3%
November 1, 1957	3%
February 1, 1958	3%
May 1, 1958	3%
August 1, 1958	3%
November 1, 1958	3%

amounting to a total of 33% of the aggregate basic price of all such Aircraft.

(b) *Payment for Aircraft.* Upon the delivery of each Aircraft to Buyer hereunder (including the Aircraft to be delivered to Buyer under Article 2(c) hereof) Buyer shall pay the purchase price thereof as follows: There shall be credited against such purchase price an amount determined by dividing the aggregate of the advance payments theretofore made by Buyer to Boeing under paragraph (a) above, less the aggregate amount of such advance payments previously credited against the purchase price of Aircraft delivered hereunder, by the number of Aircraft remaining to be delivered (including the one being delivered), and Buyer shall pay to Boeing the difference between the amount of such credit and the purchase price of such Aircraft determined in accordance with paragraph (b) of Article 3 hereof.

(c) *Payment in United States Funds.* All payments hereunder shall be made in lawful money of the United States of America, or by a cashier's check of a member bank, located in Seattle, Washington, of the United States Federal Reserve System, payable in such money, or at Buyer's election may be made by unconditional credit to Boeing's account, in Federal Reserve funds, in The First National City Bank of New York in New York City, New York, or such other bank in New York City, New York, as Boeing may designate.

(d) *Credit of Advance Payments.* In the event that Buyer notifies Boeing pursuant to paragraph (a) of Article 1 hereof that Buyer is terminating its obligation to purchase one or more of the Aircraft as provided in said paragraph (a), Boeing shall credit the aggregate amount of the previously made advance payments applicable to the Aircraft covered by such notice to the next advance payment or advance payments to be made by Buyer pursuant to paragraph (a) of this Article 5.

ARTICLE 6.

Authority to Use Government-Owned Facilities.

Boeing represents to Buyer that Boeing will have authority from the Government of the United States for the use by Boeing for the manufacture of the Aircraft of such facilities (which term as used in this Article 6 includes, without limitation, special tooling, dies and jigs) to which the Government has any title, as owner or otherwise, or in which the Government has any interest, right or privilege, as are used by Boeing in the manufacture of the Boeing Model KC-135 airplane for the U. S. Air Force and as may be necessary for the manufacture of the Aircraft in accordance with the delivery schedules herein provided.

DX 85, Supp. No. 5, page 1
(Boeing - AAL Purchase Agreement - B707-123s, 7/28/58)

SUPPLEMENTAL AGREEMENT NO. 5

TO

PURCHASE AGREEMENT NO. 8 DATED MARCH 1, 1956

BETWEEN

BOEING AIRPLANE COMPANY

AND

AMERICAN AIRLINES, INC.

RELATING TO BOEING MODEL 707-120 SERIES AIRCRAFT

MODEL 707-123

THIS SUPPLEMENTAL AGREEMENT entered into as of this 28th day of July, 1958, by and between BOEING AIRPLANE COMPANY, a Delaware corporation (hereinafter called Boeing) and AMERICAN AIRLINES, INC., a Delaware corporation (hereinafter called Buyer):

W I T N E S S E T H:

WHEREAS, the parties hereto entered into an agreement dated March 1, 1956, relating to Boeing Model 707-123 Aircraft, which agreement, as heretofore amended, modified and supplemented, is hereinafter called "the Purchase Agreement"; and

WHEREAS, the parties desire to further amend the Purchase Agreement as hereinafter provided,

NOW, THEREFORE, in consideration of the mutual covenants herein contained, the parties hereto agree that the Purchase Agreement is hereby amended as follows:

1. In paragraph (a) of Article 1, substitute the words and figures "Twenty-five (25)" for the words and figures "Thirty (30)".

2. In paragraph (a) of Article 2, the schedule for the delivery of the Aircraft is hereby revised in its entirety to read as follows:

<u>MONTH OF DELIVERY</u>	<u>QUANTITY OF AIRCRAFT</u>
February, 1959	2
March, 1959	2
April, 1959	2
May, 1959	3
June, 1959	2
July, 1959	2
August, 1959	1
September, 1959	1
October, 1959	1
November, 1959	1
December, 1959	1
January, 1960	1
February, 1960	1
March, 1960	1
April, 1960	2
May, 1960	2

3. Paragraph (a) of Article 3 is hereby revised in its entirety to read as follows:

"(a) The basic price of each Aircraft shall be Four Million Six Hundred Fifty-two Thousand Four Hundred Sixty and no/100 Dollars (\$4,652,460.00). The purchase price of each Aircraft shall be the basic price increased or decreased, as the case may be, by the net amount of all price changes specified in Change Orders applicable thereto, executed in accordance with Article 11 or 12 hereof."

4. Paragraph (b) of Article 5 is hereby revised in its entirety to read as follows:

"(b) Payment for Aircraft. Upon the delivery of each Aircraft to Buyer hereunder (including the

(Allen Letter Announcing Boeing Jet, Nov. 19, 1954) 11/17/54November 19, 1954 DX 95

Dear Eddie:

In the early part of 1952 the Boeing Company commenced the design and manufacture of a prototype jet transport. This airplane made its first flight on July 15, 1954, and has now been flown more than 69 hours in 47 flights.

In January, 1954, the Boeing Company commenced work on a production model jet tanker-transport. Although this airplane will have a somewhat larger and longer fuselage than the prototype, its configuration in all other respects does not differ materially from that of the prototype. This work is now proceeding under a contract which the Company has with the Air Force.

The Company has for some time been engaged in the preparation of a specification covering a proposed commercial jet transport. It has also ascertained certain performance warranties of United Aircraft Corporation with respect to the J-57 engine. The engine specification and attendant warranties will be incorporated in the specification covering the airplane which should be in form for discussion with prospective commercial customers by November 22nd.

The Boeing Company has a sincere desire to produce a jet transport for interested air lines and believes that the time has arrived to undertake negotiations. Before actual construction of commercial transports can begin, the Company must work out with the Air Force an arrangement which would permit the use, for commercial production, of tooling designed and constructed for use on the Government contract. It must also arrange for the use of a portion of the Government owned Renton Plant for commercial production.

DX 95, page 2
(Allen Letter Announcing Boeing Jet, Nov. 19, 1954)

-2-

The Boeing Company proposes that a production notice type contract be negotiated. Under such a contract, upon notice given by Boeing within an agreed period of time, the contract would become binding upon both parties if:

1. The final price is not in excess of the price set forth in the production notice contract.
2. The delivery schedule is as favorable as that set forth in the production notice contract.
3. There is no substantial change in the aircraft specification.

This arrangement would permit Boeing to determine the position of the Air Force with respect to the use of tooling and plant area, to determine if sufficient orders could be secured to make commercial production feasible and to determine the degree of uniformity that could be achieved as between the different commercial customers.

The very rough estimates which we have made on costs indicate a sales price in the neighborhood of \$4,250,000 per airplane, assuming a quantity of fifty. This price might be somewhat lower if initial production orders warranted establishing a sales price on a larger quantity. This price assumes that the configuration of all commercial airplanes would be substantially identical and is based upon (1) existing labor costs on the assumption that the contract would provide for escalation on labor, and (2) estimated costs as to major items of purchased equipment on the assumption that the contract would provide for escalation on such items.

We are acquainting the major American flag air lines as well as some of the larger foreign operators with our proposed delivery schedules. In the interest of lower prices every effort must be made to secure as large a production order as possible. This will require an equitable distribution of delivery positions. Based on a go-ahead next spring, deliveries would commence in the early part of 1958. The delivery

DX 95, page 3
(Allen Letter Announcing Boeing Jet, Nov. 19, 1954)

-3-

schedule for any customer would be based on the order in which commitments are made and will take into account the quantity purchased by each customer. The attached table sets forth proposed delivery schedules for various quantities. The second customer to make a commitment would receive airplanes at the same rate as shown in the table for the quantity ordered but would start three months later than the first customer. The third customer to make a commitment would follow the same rule.

Our experience with the prototype has been highly satisfactory. We are in a position to state that we have a design that is outstanding. By reason of the experience obtained in the design, development, production and flight testing of the B-47, B-52 and 707 prototype airplanes, we can produce a commercial jet transport that will have sound economics, great passenger appeal and outstanding performance characteristics.

If you are interested in pursuing this proposal, I trust that we will hear from you at an early date.

Very truly yours,

William H. Allen

Captain E. V. Rickenbacker
Chairman of the Board,
Eastern Air Lines, Inc.
Eastern Air Lines Building
10 Rockefeller Plaza
New York 20, New York

DX 95, page 4
 (Allen Letter Announcing Boeing Jet, Nov. 19, 1954)

QUANTITIES ON INITIAL ORDER

Month of
 Delivery

	<u>25</u>	<u>20</u>	<u>15</u>	<u>12</u>	<u>10</u>
1	1	1	1	1	1
2	1	1	1	0	0
3	1	1	1	1	1
4	2	1	1	1	1
5	1	2	1	1	1
6	2	1	2	2	1
7	1	2	1	1	2
8	2	2	2	2	1
9	1	2	1	2	2
10	2	2	2	1	1
11	1	1	2	2	
12	2	1			
13	1	2			
14	2	2			
15	1				
16	2				
17	2				

(Boeing Offer to Sell Pan American 25 B-120s, 6/23/55)

Allen
BeallL. P. Kichelwadt
J. B. Connelly
K. C. Gordon
E. C. Wells
F. P. Laudan
J. O. Yeasting
J. E. Prince
HWN-LAP-MPH
Clyde Skeen

June 23, 1955

Pan American World Airways, Inc.
135 East 42nd Street
New York 17, New YorkAttention: Mr. Franklin Gledhill
Vice President

Dear Mr. Gledhill:

At your request we are pleased to submit our firm proposal for the manufacture and sale to you of twenty-five (25) Boeing Model 707 aircraft of basic configuration as described in Boeing Detail Specification D-16707, dated April 7, 1955, as follows:

1. Contract Terms

The general terms and conditions of the sale would be as set forth in the Proof of April 29, 1955, of Purchase Agreement (Production Notice Type Contract) copies of which have been previously furnished you, subject to such changes therein as are reflected in this proposal letter or are made by mutual agreement. The contract would provide that the Production Notice must be given by September 15, 1955.

2. PriceAlternate No. 1:

The basic price per airplane is \$4,500,000, subject to adjustment as follows:

- (a) On account of price changes hereafter agreed upon between the parties for any special features and departures requested by you from the basic configuration as described in the Detail Specification above mentioned.
- (b) On account of increase or decrease by reason of changes in Boeing's average hourly wage rate, subject to the limitation that any increase is limited to \$250,000 per aircraft.

Pan American World Airways, Inc.
June 23, 1955

Page -2-

(c) On account of increase or decrease by reason of changes in prices of certain items of outside purchased equipment, such as engines, automatic pilot system, air conditioning system and reverse thrust unit.

(d) If on August 1, 1955, Boeing has firm contracts for the sale of eighty (80) or more Model 707 aircraft to commercial customers (including Pan American World Airways, Inc.), the basic price of each aircraft would be reduced as follows:

Total Quantity of Model 707 Aircraft sold by August 1, 1955	Reduction in Price	
	If such reduction would result in no loss or in a profit of less than 10% of cost to Boeing	If such reduction would result in a profit of at least 10% of cost to Boeing
80 - 89, inclusive	\$100,000	\$200,000
90 - 99, inclusive	175,000	350,000
100 and over	250,000	500,000

Alternate No. 2

The basic price per airplane is \$4,500,000, subject to adjustment as follows:

(a) On account of price changes hereafter agreed upon between the parties for any special features and departures requested by you from the basic configuration as described in the Detail Specification above mentioned.

(b) No provision for labor escalation.

(c) Increase or decrease by reason of changes in prices of certain items of outside purchased equipment, such as engines, automatic pilot system, air conditioning system, and reverse thrust unit.

(d) No price reduction for additional aircraft sold.

3. Delivery

The aircraft would be delivered to you as follows:

Month of Delivery
July, 1955

Quantity of Aircraft

Pan American-World Airways, Inc.
June 23, 1955

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January, 1959
February
March
April
May
June
July
August
September
October
November
December

2
2
2
2
2
2
2
2
2
2
2
1

This delivery schedule contemplates that at least eight (8) Model 707 aircraft will be delivered to you before any will be delivered to any other commercial customer.

4. Term of Offer

This offer will remain firm until July 18, 1955.

If this proposal is accepted by you, we would suggest that both parties cooperate to the end that the Purchase Agreement be finalized and executed at the earliest possible date. This would enable Boeing and Pan American to proceed promptly to obtain the Air Force approval required before the program can go forward.

Very truly yours,

BOEING AIRPLANE COMPANY

William M. Allen
President

LIMITED

June 24, 1955

L. P. Michelwalt
J. B. Connolly
K. C. Gordon
E. C. Wells
F. P. Laudon
J. O. Yeasting
J. E. Prince
Clyde Skeon
H. W. Hefner - LAP - 1

American Airlines, Inc.
100 Park Avenue
New York 17, N. Y.

Attention: Mr. C. R. Smith, President

Gentlemen:

Pursuant to our discussions with you, we are pleased to submit our firm proposal for the manufacture and sale to you of fifteen (15) Boeing Model 707 aircraft of basic configuration as described in Boeing Detail Specification D-16787, dated April 7, 1955, as follows:

1. Contract Terms

The general terms and conditions of the sale would be set forth in a Purchase Agreement of the production notice type. It would provide that (a) Boeing must give the production notice by September 15, 1955, or buyer may cancel; and (b) Boeing may cancel if the required Air Force approval is not obtained prior to delivery of production notice or if within 60 days thereafter Boeing does not have firm orders for at least fifty (50) Model 707 aircraft.

2. Price

Alternate No. 1:

The basic price per airplane is \$4,536,000, subject to adjustment as follows:

- (a) On account of price changes hereafter agreed upon between the parties for any special features and departures requested by you from the basic configuration as described in the Detail Specification above mentioned.
- (b) On account of increase or decrease by reason of changes in Boeing's average hourly wage rate, subject to the limitation that any increase is limited to \$235,000 per aircraft.
- (c) On account of increase or decrease by reason of changes in prices of certain items of outside purchased equipment, such

American
June 24, 1955

Page 2

as engines, automatic pilot system, air conditioning system and reverse thrust unit.

- (4) If on August 1, 1955, Boeing has firm contracts for the sale of eighty (80) or more Model 797 aircraft to commercial customers (including Americans), the basic price of such aircraft would be reduced as follows:

Total Quantity of Model 797 aircraft sold by August 1, 1955	Reduction in Price	
	If such reduction would result in no loss or in a profit of less than 10% of cost to Boeing	If such reduction would result in a profit of at least 10% of cost to Boeing
50-59, inclusive	\$100,000	\$200,000
60-69, inclusive	175,000	350,000
100 and over	250,000	500,000

Alternative No. 2:

The basic price per airplane is \$4,500,000, subject to adjustment as follows:

- On account of price changes hereafter agreed upon between the parties for any special features and departures requested by you from the basic configuration as described in the Detail Specification above mentioned.
- No provision for labor escalation.
- Increase or decrease by reason of changes in prices of certain items of outside purchased equipment, such as engines, automatic pilot system, air conditioning system and reverse thrust unit.
- No price reduction for additional aircraft sold.

3. Payment

Advance payments would be made by the Buyer to Boeing as follows:

- 15% of basic price within 30 days after execution of purchase agreement;
- 45% of basic price within 90 days after delivery of production

June 2: (Boeing Offer to Sell American 15 B-120s, 6/24/55)

(c) 20% of basic price in ten (10) monthly installments beginning seventh month after production notice; and

(d) 33% of price increases resulting from change orders.

The foregoing advance payments totaling 33% of the aggregate basic price would be credited pro rata against the purchase price of the aircraft and the balance would be payable on delivery.

4. Delivery

The aircraft would be delivered to you as follows:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
April, 1959	1
May	1
June	1
July	1
August	1
September	1
October	1
November	1
December	1
January, 1960	1
February	2
March	2
April	1
	1

Boeing would agree not to deliver Model 767 aircraft to any other customer engaged in commercial air transport service between points within the United States earlier than such aircraft will be delivered to American. Prior delivery to another customer during any one month will not be construed as earlier delivery to such other customer.

5. Term of Offer

This offer will remain firm until July 15, 1955.

If this proposal appears acceptable to you, we will be glad to submit a complete form of Purchase Agreement for your consideration to the end that the Purchase Agreement be formalized and executed at the earliest possible date.

Very truly yours,
BOEING AIRCRAFT COMPANY

By: *[Signature]*
J. D. Connelly

J. D. Connelly, Director of

ENCLOSURE

(Boeing Offer to Sell United 15 B-120s, 6/24/55)

LIMITED

cc: W. H. Allen
 W. E. Beall
 L. P. Mickelwait
 ✓ J. B. Connelly
 K. C. Gordon
 E. C. Wells
 F. P. Laudan
 J. O. Yeasting
 J. E. Prince
 Clyde Skeon
 H. W. Keffner - HPH - L

June 24, 1955

United Air Lines, Inc.
 5959 South Cicero Avenue
 Chicago 32, Illinois

Attention: Mr. W. A. Patterson, President

Gentlemen:

Pursuant to our discussions with your Mr. Merrill, we are pleased to submit our firm proposal for the manufacture and sale to you of fifteen (15) Boeing Model 707 aircraft of basic configuration as described in Boeing Detail Specification D-16737, dated April 7, 1955, as follows:

1. Contract Terms

The general terms and conditions of the sale would be set forth in a Purchase Agreement of the production notice type. It would provide that (a) Boeing must give the production notice by September 15, 1955, or buyer may cancel; and (b) Boeing may cancel if the required Air Force approval is not obtained prior to delivery of production notice or if within 60 days thereafter Boeing does not have firm orders for at least fifty (50) Model 707 aircraft.

2. PriceAlternate No. 1:

The basic price per airplane is \$4,500,000, subject to adjustment as follows:

- (a) On account of price changes hereafter agreed upon between the parties for any special features and departures requested by you from the basic configuration as described in the Detail Specification above mentioned.
- (b) On account of increase or decrease by reason of changes in Boeing's average hourly wage rate, subject to the limitation that any increase is limited to \$250,000 per aircraft.
- (c) On account of increase or decrease by reason of changes in prices of certain items of outside purchased equipment, such

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as engines, automatic pilot system, air conditioning system and reverse thrust unit.

- (3) If on August 1, 1955, Boeing has firm contracts for the sale of eighty (80) or more Model 707 aircraft to commercial customers (including United), the basic price of each aircraft would be reduced as follows:

Total Quantity of Model 707 aircraft sold by August 1, 1955	Reduction in Price	
	If such reduction would result in no loss or in a profit of less than 10% of cost to Boeing	If such reduction would result in a profit of at least 10% of cost to Bo
80-89, inclusive	\$100,000	\$200,000
90-99, inclusive	175,000	350,000
100 and over	250,000	500,000

Alternate No. 2:

The basic price per airplane is \$4,500,000, subject to adjustment as follows:

- (a) On account of price changes hereafter agreed upon between the parties for any special features and departures requested by you from the basic configuration as described in the Detail Specification above mentioned.
- (b) No provision for labor escalation.
- (c) Increase or decrease by reason of changes in prices of certain items of outside purchased equipment, such as engines, automatic pilot system, air conditioning system and reverse thrust unit.
- (d) No price reduction for additional aircraft sold.

Payment

Advance payments would be made by the buyer to Boeing as follows:

- (a) 15% of basic price within 30 days after execution of purchase agreement;
- (b) 45% of basic price within 30 days after delivery of production notice;

20% of basic price in ten (10) monthly installments beginning

seventh month after production notice; and

- (d) 33% of price increases resulting from change orders.

The foregoing advance payments totaling 33% of the aggregate basic price would be credited prorata against the purchase price of the aircraft and the balance would be payable on delivery.

4. Delivery

The aircraft would be delivered to you as follows:

<u>Month of Delivery</u>	<u>Quantity of Aircraft</u>
April, 1959	1
May	1
June	1
July	1
August	1
September	1
October	1
November	1
December	1
January, 1960	2
February	2
March	1
April	1

Boeing would agree not to deliver Model 707 aircraft to any other customer engaged in commercial air transport service between points within the United States earlier than such aircraft will be delivered to United. Prior delivery to another customer during any one month will not be construed as earlier delivery to such other customer.

5. Term of Offer

This offer will remain firm until July 18, 1955.

If this proposal appears acceptable to you, we will be glad to submit a complete form of Purchase Agreement for your consideration to the end that the Purchase Agreement be formalized and executed at the earliest possible date.

Very truly yours,
BOEING AIRPLANE COMPANY

ORIGINAL SIGNED BY
J. B. CONNELLY

cc: Mr. J. A. Herlihy.

UNITED

J. B. Connolly, Director of
Contract Administration

(1) The information pertaining to delivery positions for Pan American is contained in DX 79. Specifically, the delivery positions in the first column are found in Article 2(a) on page 1 of Purchase Agreement No. 1, and those in the second column are found in paragraph 2 on page 2 of Supplemental Agreement No. 3 (3/15/56).

(2) The information pertaining to delivery positions for Continental is contained in DX 80. Specifically, the delivery positions in the first column are found in Article 2(a) on page 2 of Purchase Agreement No. 2; this schedule was not changed prior to 1960.

(3) The information pertaining to delivery positions for Braniff is contained in DX 82. Specifically, the delivery positions in the first column are found in Article 2(a) on page 2 of Purchase Agreement No. 4; this delivery schedule was not changed prior to 1960.

(4) The information pertaining to delivery positions for TWA (Teeeco) is contained in DX 66. Specifically, the delivery positions in the first column are found in Article 2(a) on page 2 of Purchase Agreement No. 7, and those in the second column are found in paragraph 2 on page 2 of Supplemental Agreement No. 3 (1/10/57).

(5) The information pertaining to delivery positions for American is contained in DX 85. Specifically, the delivery positions in the first column are found in Article 2(a) on page 2 of Purchase Agreement No. 8, and those in the second column are found in paragraph 2 on page 2 of Supplemental Agreement No. 5 (7/28/58).

(6) The information pertaining to delivery positions for Qantas is contained in DX 68. Specifically, the delivery positions in the first column are found in Article 2(a) on page 2 of Purchase Agreement No. 14, and those in the second column are found in paragraph 2 on page 1 of Letter Agreement 14-3 (6/12/59).

(7) The information pertaining to delivery positions for Pan American is contained in DX 81. Specifically, the delivery positions in the first column are found in Article 2(a) on page 1 of Purchase Agreement No. 3, and those in the second column are found in paragraph 2 on page 2 of Supplemental Agreement No. 1 (3/13/56).

(8) The information pertaining to delivery positions for Air France is contained in DX 83. Specifically, the delivery positions in the first column are found in Article 2(a) on pages 2-3 of Purchase Agreement No. 5, and those in the second column are found in paragraph 2 on page 1 of Supplemental Agreement No. 2 (12/5/57).

(9) The information pertaining to delivery positions for British is contained in DX 84. Specifically, the delivery positions in the first column are found in Article 2(a) on pages

2-5 of Purchase Agreement No. 5, and those in the second column are found in paragraph 2 on page 2 of Supplemental Agreement No. 2 (4/5/57).

(10) The information pertaining to delivery positions for TWA (Boeing) is contained in DX 57. Specifically, the delivery positions in the first column are found in Article 2(a) on page 2 of Purchase Agreement No. 10; this schedule was not changed prior to 1950.

(11) The information pertaining to delivery positions for TWA (Boeing) is contained in DX 57. Specifically, the delivery positions in the first column are found in Article 2(a) on page 2 of Purchase Agreement No. 10; this schedule was not changed prior to 1950.

(12) The information pertaining to delivery positions for TWA (Boeing) is contained in DX 57. Specifically, the delivery positions in the first column are found in Article 2(a) on pages 2-5 of Purchase Agreement No. 12; this schedule was not changed prior to 1950.

(13) The information pertaining to delivery positions for Air India is contained in DX 57. Specifically, the delivery positions in the first column are found in Article 2(a) on page 1 of Purchase Agreement No. 15, and those in the second column are found in paragraph 2 on page 2 of Supplemental Agreement No. 5 (11/2/59).

The general designations, "Boeing 707 (Transcontinental Version)" and "Boeing 707 (Intercontinental Version)," used to describe the aircraft considered in these lists, are determined by the types of aircraft ordered by the airlines from Boeing -- specifically whether the aircraft is of the Boeing 707-120 class (transcontinental version) or the Boeing 707-320 class (intercontinental version). Set forth below are the airline designations of the aircraft type ordered, set forth in the agreements with Boeing, and the class of aircraft (120 class or 320 class) to which each type belongs. The information as to aircraft types is taken from page 193 of Jane's - The World's Aircraft, 1965-1966 Edition, published by Houghton Mifflin.

Purchase Agreement Number & Airline	Airline's Designation of Aircraft Type Ordered	707- 0 Class or 707-320 Class
#1 - Pan American	707 - 121	120
#2 - Continental	707 - 124	120
#3 - Pan American	707 - 321	320
#4 - TWA	707 - 227	120
#5 - Air France	707 - 323	320
#6 - TWA	707 - 329	320
#7 - TWA	707 - 131	120
#8 - American	707 - 123	120
#9 - TWA	707 - 331	320
#10 - TWA	707 - 430	320
#11 - TWA	707 - 436	320
#12 - TWA	707 - 138	120
#13 - Air India	707 - 437	320